

1                   IN THE UNITED STATES DISTRICT COURT  
2                   FOR THE DISTRICT OF NEW JERSEY  
3                   Civil No. 2:08-cv-05169(WJM)-MF

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5       IN RE URETHANE ANTITRUST       :       TRANSCRIPT OF PROCEEDINGS  
6       LITIGATION                       :       - Trial -  
7       - - - - - - - - - - -X

8                                       Newark, New Jersey  
9                                       March 23, 2016

10       B E F O R E:

11                                   THE HONORABLE WILLIAM J. MARTINI,  
12                                   UNITED STATES DISTRICT JUDGE,  
13                                   And a Jury

14       Pursuant to Section 753 Title 28 United States Code, the  
15       following transcript is certified to be an accurate record as  
16       taken stenographically in the above entitled proceedings.

17       S/WALTER J. PERELLI

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2 (Trial resumes - Jury not present.)

3 THE LAW CLERK: All rise.

4 THE COURT: Everybody be seated. Good morning.

5 MR. JOHNSON: Good morning, your Honor.

6 THE COURT: We were waiting for a juror. They're all  
7 here I believe.

8 Would you bring them out, please.

9 THE DEPUTY CLERK: Please rise for the Jury.

10 (Jury present.)

11 THE COURT: Good morning, please be seated.

12 Mr. Johnson, do you have a witness?

13 MR. JOHNSON: We do. Dr. Leslie Marx, and Mr. Martin  
14 will be conducting the examination this morning.

15 THE COURT: Okay.

16 MR. BERNICK: Your Honor, good morning. Could I just  
17 sit over there so I can see?

18 THE COURT: Sure.

19 MR. BERNICK: Thank you.

20 THE COURT: Is Dr. Marx here?

21 MR. JOHNSON: She is.

22 MR. MARTIN: While she's walking up, I'm the person  
23 who was on the board earlier in opening arguments. I've been  
24 sitting here and you actually heard me during some of the  
25 testimony. So it's a pleasure to finally talk to you.

1 L E S L I E M A R X, called as a witness, having been first  
2 duly sworn, is examined and testifies as follows:

3

4 THE LAW CLERK: Please state your name for the record.

5 THE WITNESS: Leslie Marx.

6 THE DEPUTY CLERK: Spell it.

7 THE WITNESS: L-e-s-l-i-e; M-a-r-x.

8 THE DEPUTY CLERK: You may be seated.

9 THE COURT: Good morning. If you would, just make  
10 sure you speak into the microphone and wait until the question  
11 is fully asked before you answer it. Okay?

12 THE WITNESS: I'll do my best.

13 DIRECT EXAMINATION

14 BY MR. MARTIN:

15 Q Good morning, Dr. Marx.

16 A Good morning.

17 Q So before I want to ask you some questions, I want to do a  
18 little preliminary part and ask you if you prepared some  
19 demonstrative pictures to help to explain to the jury your  
20 investigation and your analysis for your opinions.

21 A I did.

22 Q And some of those are going to be on a computer screen and  
23 we have some on the board here.

24 Were all those prepared by you or under your  
25 supervision?

1 A Yes.

2 Q You also have next to you a stack of expert reports if you  
3 need them. Okay?

4 A Great, thanks.

5 Q I'm going to ask you first if you could give the jury first  
6 a sense of your educational background.

7 A Yes. I have an undergraduate degree from Duke University  
8 in mathematics and a master's degree and Ph.D in economics from  
9 Northwestern University.

10 Q So when I look at this chart with your credentials up there  
11 I see the word "econometrics." Can you explain what the word  
12 "econometrics" means?

13 A Yes, down at the bottom it has econometrics. Econometrics  
14 is the statistical analysis of economic data. It's a field in  
15 economics. It's a part of economics.

16 Q Is it different from economics?

17 A I think of it of being a subset of economics, one of the  
18 fields within economics.

19 Q There's also a reference up there to a "field exam." Would  
20 you explain what a field examine is?

21 A Yeah. In a Ph.D program in economics, it would be typical  
22 to ask the students to take field exams, to take qualifying  
23 exams. And at Northwestern you would be required to take  
24 these -- take and pass the qualifying exams in econometrics,  
25 micro economics and macroeconomics.

1 Q And did you take and pass a field exam in econometrics?

2 A Yes.

3 Q Does everybody who gets a Ph.D in economics take a field  
4 exam in econometrics?

5 A No, the Ph.D programs differ. Some you might only be  
6 required to do take one or pass one field exam. If requested,  
7 you would take all three. But you need to pass the  
8 econometrics, micro-economics and macroeconomics. It's their  
9 kind of a stamp of approval kind of certifying that you've met  
10 the standards that you qualify in those different areas of  
11 economics.

12 Q Let me ask you some questions then about your professional  
13 background following your education.

14 Just give the jury a sense of your profession. What  
15 happened after you graduated with your Ph.D.?

16 A Sure. I was first an Assistant Professor and then  
17 Associate Professor at the University of Rochester, at the  
18 Business School at the University of Rochester. Then I moved  
19 to Duke University to the Business School, the Fuqua School of  
20 Business at Duke University. And I've been -- I've been at  
21 Duke since 2002, with the exception of a period in 2005-2006  
22 when I served as the Chief Economist at the Federal  
23 Communications Commission in Washington, D.C.

24 Q So, could you give the jury a little bit of flavor about  
25 what you were doing at the FCC?

1 A Sure.

2 The Chief Economist at the Federal Communications  
3 Commission is in charge of overseeing all of the economics  
4 coming out of the Commission, and so the kinds of things that  
5 might come up there are issues with competition among the  
6 telecommunications firms, whether there might be concerns about  
7 the effectiveness of competition among telecommunications  
8 providers. There were some issues with respect to competition  
9 among the cable -- cable television providers while I was  
10 there. So that's an overview.

11 Q Why was it only for a year?

12 A Oh. The program -- there's a program in the U.S. that  
13 allows government agencies like the Federal Communications  
14 Commission to essentially borrow a professor, borrow someone  
15 from academics and bring them in to serve, for example, as the  
16 chief economist, and that program only lets you do it for one,  
17 or a maximum of two years.

18 Q There's also a reference to the Robert Dandeen Professor.  
19 What does that mean?

20 A My title at Duke now is the Robert Bandeen Professor of  
21 Economics. It's an endowed chair. It's a chaired  
22 professorship or a distinguished professorship. So the  
23 particular title is maybe not so important but it signifies  
24 that I'm at the top of the professorial ladder at Duke  
25 University.



1 Q How does one become the Robert Bandeen professor?

2 A There's a process where you would be nominated by the  
3 faculty of the school, and then as part of the process they  
4 would also ask outside academics at other universities to  
5 evaluate whether you are viewed as a leader in the profession  
6 and qualified to be named as a distinguished professor.

7 Q Typically, who are your students at Duke?

8 A I teach mainly Ph.D students and MBA students. I'm at the  
9 Business School so a lot of my business are MBA students there.

10 Q And what are your duties as a professor at Duke?

11 A As a faculty member there, we would typically divide the  
12 responsibilities into teaching and research and service. And  
13 for teaching I teach courses to MBA and Ph.D students there at  
14 Duke University. For research, my research focuses on  
15 anti-competitive behavior. So we're looking at competition and  
16 the suppression of competition among firms. So I study cartels  
17 and price-fixing conspiracies and bid-rigging, and also look at  
18 auctions and procurements and the design of auctions and  
19 procurements and work to publish my research in the  
20 peer-reviewed journals in economics.

21 And then for service, there are a number of things in  
22 that bucket, but in particular, I do work as a peer reviewer  
23 for other people's work for the academic journals and also  
24 serve on editorial boards for the peer review journals.

25 Q Could you explain what a peer review is or a peer reviewer?

1 A Yeah. So in economics, the way research progresses is the  
2 research would be submitted. If you have research that you  
3 would like to have published, you would submit it to one of the  
4 peer reviewed journals. And the editors there would take it  
5 and then send it out to independent other academics to review  
6 it, to look at it and to provide critique and criticism and to  
7 assess the quality of the work. And then the reviewers would  
8 send that back to the editors, and then the editors would look  
9 at the original research and the critiques that they received  
10 from the peer reviewers and make a decision about whether the  
11 work is reliable and whether it should be published in the  
12 journal.

13 Q Have you served as an editor for a peer-reviewed  
14 publications?

15 A Yes, I'm on a couple editorial boards now and I've been on  
16 some others in the past.

17 Q Have you also published articles in the area of collusion  
18 or econometrics in peer-reviewed journals?

19 A Yes.

20 Q If you could ask you to take a look, you have next to you  
21 your disclosure --

22 A Yeah.

23 Q -- the appendix that would be your curriculum vitae.

24 A Yes, I see it here.

25 Q Is that a correct copy of your CV?

1 A Yes.

2 Q Ask you explain what a CV is?

3 A Yeah. In academics we use -- it's just a resume. So the  
4 professors tend to use the word curriculum vitae or the  
5 academic resume. It would be a list of publications and your  
6 academic credentials.

7 Q If we could pull up PX 535, which is a copy of your CV. I  
8 would like you to look at -- first of all, how many research  
9 papers and academic journals have you published?

10 A In the peer-reviewed journals, more than 30, plus a number  
11 of book chapters and other things.

12 Q I ask you to focus in on a couple of these articles.

13 The first one is titled: Plus Factors and Agreement in  
14 Antitrust Law." Do you see that?

15 A I see it.

16 Q Can you describe to the jury what that article is about?

17 A That paper is about using economic evidence to detect  
18 collusion. How an economist would look at the evidence  
19 available to them and ask whether the evidenced provides a  
20 strong inference of collusion.

21 Q How was that received in the academic community?

22 A That paper received an award for the best antitrust writing  
23 of 2011.

24 Q And before I ask you another question about these  
25 publications, in the classes you teach, do you also -- do those

1 also involve econometrics as well?

2 A I do. I don't teach a class that's specifically focused on  
3 econometrics, but in all of my classes we do econometrics and  
4 do -- it covers material that includes econometrics.

5 Q Okay. And if we could look at the next page of your CV,  
6 and focus in on the one titled "Cartel Price Announcements."

7 A Yeah. This paper, it's "Cartel Price Announcements: The  
8 Vitamins Industry."

9 There were a price-fixing conspiracy among the major  
10 manufacturers of vitamins, just Vitamin A and B. The usual  
11 vitamins. But they're made by large chemical companies and  
12 there was an admitted price-fixing conspiracy for most of the  
13 1990s. And this paper looks at the coordinated price increase  
14 announcements that were issued by the firms in the cartel and  
15 looks at how you might use a look at those price increase  
16 announcements to assess whether there was collusion by looking  
17 at the price increase announcement outside the conspiracy  
18 period and comparing it to the conduct within the conspiracy  
19 period.

20 Q And just to clarify: What is a cartel?

21 A Sorry. Collusion among firms is when the firms form an  
22 agreement to suppress competition. And so I tend to use,  
23 "collusion" or a "cartel" is just the set of firms that have  
24 gotten together to agree to suppress competition. It's the  
25 same thing as a price-fixing conspiracy. The different --

1 "collusion" and "cartel" and "price-fixing conspiracy" tend to  
2 get used interchangeably.

3 Q How was that article received by the academic community?

4 A And that article won a prize for being one of the best two  
5 papers that were published in that journal, the International  
6 Journal of Industrial Organization in that year.

7 Q In addition to all those articles, have you also written a  
8 book?

9 A I have. There's the title or the cover page.

10 Q What is this book about?

11 A The book is "The Economics of Collusion: Cartels and  
12 Bidding rings." And it's about the economics of collusion.  
13 It's about how an economist -- how an economist would think  
14 about a price-fixing conspiracy and also about bidding rings.  
15 So how an economist would think about collusion, how a  
16 economist would look at the economic evidence in order to  
17 detect collusion, and it also provides some discussion of how  
18 economists would look at data in order to assess the effect of  
19 collusion, the price increase associated with a price-fixing  
20 conspiracy.

21 Q Does that book also include a discussion of econometrics?

22 A Yeah. I don't think of it as a econometrics book or a  
23 econometric textbook but it does include some discussion of the  
24 types of econometric techniques that tend to get used in  
25 assessing the effects of price-fixing conspiracies.

1 Q What is that quote from?

2 A Oh, the quote there is -- Professor Elzinga is one of Dow's  
3 experts in this case, and in one of the reports that he  
4 produced as part of this case he referred to the book as a  
5 "valuable piece of scholarship."

6 Q In addition to your academic work, do you do anything else  
7 for a living?

8 A I also do some consulting work, like being here today.

9 Q Where do you do that?

10 A I work with a consulting firm called Bates White.

11 Q And how often have -- have you testified in court before?

12 A I've been in court twice before but only with a judge.  
13 I've never been presenting to a jury before.

14 Q So you've testified in court before?

15 A I've been in court before twice but only in front of a  
16 judge, not with a jury.

17 Q Were you qualified as an expert in those cases?

18 A Yes.

19 Q Have you worked on other price-fixing cases?

20 A I have.

21 Q How many of those?

22 A About ten.

23 Q What did you do in those cases?

24 A I played different roles in some of the cases. Sometimes I  
25 was a consulting expert, other cases the testifying expert.

1 Some of them had to do with looking at the economic evidence to  
2 reach an opinion about whether there was collusion, and others,  
3 about assessing the effects, the extent to which the prices  
4 were elevated as a result of the collusion.

5 Q Did that work involve the application of econometrics?

6 A Yes.

7 Q What's your hourly rate?

8 A Right now it's 950. I've been working on this case for  
9 about three years now, so back when I started it was 750.

10 Q And approximately how many hours have you worked on this  
11 case?

12 A Approximately 300 hours.

13 MR. MARTIN: Your Honor, we would tender Dr. Marx as  
14 an expert in economics and econometrics.

15 THE COURT: Ladies and gentlemen, typically in a trial  
16 people testify who have knowledge of facts either through their  
17 senses, what they observe, what they know, what they hear. The  
18 law permits, however, that when somebody has a particular  
19 expertise or skill or training in education, they may testify  
20 as to opinions that they have regarding that discipline that  
21 they're an expert or skilled in. And in this case, Dr. Marx is  
22 being offered as an expert to testify in the area of economics  
23 and econometrics, and the Court finds based on her  
24 qualifications that she's an expert in that area and permitted  
25 to testify as to her opinions in that area.

1 All right.

2 MR. MARTIN: Thank you, your Honor.

3 BY MR. MARTIN:

4 Q So let's turn to this case. Can you tell the jury how you  
5 got involved in this case?

6 A Yes. When I first got involved in this case, it had  
7 already been going on, and there was an economist before me who  
8 had been working on the case, and his name was Dr. Raiff, and  
9 for medical reasons he was no longer able to continue to work  
10 as the expert.

11 And so I was asked to come in and look at the work  
12 that had already been done by Dr. Raiff and others, and look at  
13 the evidence in the case and to reach a conclusion about  
14 whether I would be able to step in and sponsor and defend the  
15 analysis and conclusions that Dr. Raiff had reached.

16 Q And just to give the jury a sense of where in the process  
17 this was, when you say "what work had been done to date," just  
18 what work had been done to date?

19 A Yeah. When I first got involved in the case -- Dr. Raiff  
20 is an economist, and he had -- he had done an analysis, he had  
21 written a report, he had developed estimates of the -- to the  
22 extent to which prices were elevated as a result of the  
23 conspiracy, and that report had been provided to Dow's economic  
24 experts.

25 And Dow's experts had that report for about 11 months,



1 and during that time they were able to go through Dr. Raiff's  
2 report and offer critiques and criticisms of that report. Kind  
3 of like in the refereeing process. So they were able to review  
4 the work that Dr. Raiff had done, and each of Dows experts  
5 produced a report. Dr. Ugone and Professor Elzinga, the two  
6 experts for Dow, they each produced a report offering their  
7 criticisms of Dr. Raiff's initial report, and then Dr. Raiff  
8 was allowed to respond.

9 So he wrote another report responding to -- making  
10 some adjustments and doing some additional work and responding  
11 to the criticisms offered by Dow's experts.

12 So when I came into the case, there was the initial  
13 report, a set of criticisms and critiques by Dow's experts and  
14 a response to them, plus I had access to all of the materials  
15 and evidence that was available in the case.

16 Q Were you able to draw on your academic background and  
17 familiarity with the peer review process to fulfill your  
18 assignment?

19 A Yeah. It felt a little bit -- it was a little bit unusual  
20 for -- to be in that situation, but it felt a lot like the peer  
21 review process. Where as an editor of the journal I would get  
22 a piece of research and I would get my outside reviewers to  
23 look at and sometimes I'll ask the author to make some changes  
24 or do some additional work, and so then I'll have in front of  
25 me the research and the critiques and I would be evaluating

1 that body of work as a whole. So it felt a little bit like  
2 that process.

3 Q To perform your assignment, did you have to know what Dr.  
4 Raiff's assignment was?

5 A Oh, definitely.

6 Q Can we talk through that a little bit?

7 A I have a slide here.

8 So Dr. Raiff's assignment was to determine whether the  
9 plaintiffs were overcharged as a result of the conspiracy to  
10 elevate the prices of TDI, MDI and polyether polyols; and if  
11 so, if they were overcharged, to quantify the amount of the  
12 harm suffered by the plaintiffs.

13 Q Now, during today's questioning I may refer to it as "your  
14 report," but when that happens we all understand that it's Dr.  
15 Raiff's report.

16 A That's fine.

17 Q And it's your opinions.

18 I'd like to have you explain a couple of the words  
19 that are in this assignment if I could.

20 "Overcharged"; what does that mean in economics?

21 A For an overcharge here is going to be the extent to which  
22 the prices that were paid by the plaintiffs were higher than  
23 the prices would have been if there hadn't been a conspiracy.

24 Q And what does a conspiracy mean?

25 A Again, it's collusion; it means a group of firms that have

1 an agreement to suppress competition.

2 Q Were you asked to form an opinion on the existence of  
3 conspiracy?

4 A No. I was instructed to assume that the jury -- make the  
5 assumption that the jury has found that there was a conspiracy,  
6 and to take that as a given, and to, from that starting point,  
7 assess whether the conspiracy was affected, whether it did  
8 elevate prices above what they otherwise would have been, and  
9 to quantify the extent to which the prices were elevated.

10 Q Based on your experience, is that assumption unusual in  
11 price-fixing cases?

12 A No, it's -- it's a typical way these cases proceed. We  
13 want to -- in the event that the jury should decide that they  
14 view that there was a conspiracy, to then provide you with an  
15 opinion that would guide you in thinking about whether the  
16 conspiracy was effective and the amount to which it affected  
17 the plaintiffs.

18 Q Does that mean that you took the existence of a conspiracy  
19 as a given without doing any additional work?

20 A No, no. So I -- in thinking about that assumption, I  
21 reviewed the evidence available to me and did a study to make  
22 sure that given the evidence that I saw, that it was reasonable  
23 to proceed under the assumption that there was a conspiracy.

24 Q And did you gain an understanding of the behavior of the  
25 alleged conspiracy through your investigation?

1 A Yes.

2 Q How did you gain that understanding?

3 A I think -- okay, yeah, this supplied just has a summary of  
4 the kinds of materials that I reviewed. So there were again  
5 the reports: Dr. Raiff's report, the Plaintiffs' report, Dow's  
6 reports, and also, they were -- they were deposed as well, so  
7 there was testimony from deposition for all of these economic  
8 experts. I reviewed business records, depositions, interviews  
9 and other information regarding the structure of the industry  
10 the behavior of the conspirators and market performance, and  
11 also I looked at all the data.

12 Q Did the expert reports for Dr. Raiff and for Dr. Ugone and  
13 Professor Elzinga, did they cite to documents and testimony?

14 A Yeah. So they were -- they were also incorporating and  
15 citing to large numbers of documents and evidence that's in the  
16 record in this case. And so I looked at the reports and also  
17 the things that were being cited and referred to in those  
18 reports.

19 Q Now, you talked a little bit about Dow's experts' reports  
20 and the criticisms. How important were those criticisms to you  
21 as you fulfilled your assignment?

22 A I mean, it was really important to me. It was really  
23 helpful to me to see the criticisms that were being offered, so  
24 it was helpful for me to see where the points of concern were,  
25 what these experts' criticisms were; and also to see the areas

1 where they didn't have any particular concerns, that indicated  
2 to me areas of more consensus about the way to proceed.

3 Q After doing all this work, what was the understanding that  
4 you gained of the behavior of the conspiracy?

5 A My understanding is that it was an agreement to suppress  
6 competition, efforts to achieve consensus about price increase  
7 and efforts to try to make those price increases effective.

8 Q Were you able to fulfill your assignment?

9 A Yes.

10 Q Were you able to reach any opinions?

11 A I did.

12 Q I'd like --

13 A I think there's a slide with a summary.

14 Oh, I guess they'll come up one-by-one.

15 Q There we go.

16 Can you tell the jury the first opinion here?

17 A That the industry was prone to successful collusion.

18 Q What does that mean?

19 A What I mean by that is that, I want to look at the industry  
20 and ask the question: If there were a conspiracy in this  
21 particular industry, is it sensible to think that it would have  
22 been able to be effective in elevating prices.

23 Q Are there certain industry characteristics that economists  
24 view as making an industry more or less prone to collusion?

25 A Yes.

1 Q Just high level; what are those?

2 A I'm thinking about smaller numbers of firms, high barriers  
3 to entry, homogeneous products, those kinds of things. We have  
4 a slide to talk about that later in more detail I think.

5 Q Was this opinion important to you?

6 A It was important to me, because I'm being asked for an  
7 opinion about whether there was effective collusion, whether  
8 the price-fixing conspiracy was actually able to elevate prices  
9 above what they otherwise would have been, and I want to make  
10 sure that that makes sense that you would see that kind of  
11 thing in this particular industry.

12 Q Let's turn to your next opinion.

13 Can you tell the jury what that was?

14 A There was an effective conspiracy that caused higher prices  
15 market-wide for urethane chemicals.

16 Q What do you mean by an "effective conspiracy"?

17 A I mean the result of the conspiracy, the effect of the  
18 conspiracy was actually to elevate prices above what they  
19 otherwise would have been.

20 Q What does "market-wide" mean in that opinion?

21 A Encompassing all of the -- the market-wide price, all of  
22 the -- affecting all of the buyers and sellers in the market.

23 Q Does that include the plaintiffs in this case?

24 A It includes the plaintiffs, but also a larger set of  
25 purchasers.

1 Q Okay. Let's take a look at your third opinion.

2 A The plaintiffs suffered harm as a result of the alleged  
3 conspiracy.

4 Q What does that mean?

5 A Well, there I'm singling out the plaintiffs in particular,  
6 so the second bullet there was about a market-wide elevation in  
7 price. But I also need to dig down and ask specifically with  
8 the plaintiffs: Were the plaintiffs at issue in this case  
9 affected by the increase in prices.

10 Q And we're going to talk about all these opinions more  
11 throughout the day. But high level, how did you reach that  
12 opinion?

13 A There I was using an econometric analysis of the data and  
14 evaluation of the evidence in the case.

15 Q And your last opinion that?

16 A The plaintiffs paid over \$608 million more than they would  
17 have paid but-for the conspiracy.

18 Q And how did you reach that opinion?

19 A Again, this was an analysis of the data and evaluation of  
20 the evidence in the case.

21 Q Did you estimate damages for every plaintiff here?

22 A I did. I estimated the overcharges associated with each  
23 transaction by each of the plaintiffs.

24 Q And last -- I would ask you actually to look at the damage  
25 figures and ask you if you could explain this to the jury.

1 THE WITNESS: Judge Martini? Judge?

2 MR. MARTIN: Your Honor, if it's okay, can she stand  
3 up?

4 THE WITNESS: Would it be okay if I pointed?

5 THE COURT: So long as you keep your voice up.

6 MR. MARTIN: And if you turn the mic a little bit, it  
7 will pick you up.

8 THE WITNESS: I have a microphone here. But if I just  
9 stand here --

10 THE COURT: Do you want to use this? No?

11 THE WITNESS: Would you mind if I just pointed?

12 MR. MARTIN: She's a professor, she's used to  
13 standing.

14 THE COURT: Okay.

15 A This is a table, and so it's showing in this table for the  
16 three products at issue -- what I'm -- when I'm talking about  
17 urethane chemicals I mean specifically these three: TDI, MDI  
18 and polyols. And the table is showing you in the first column  
19 the total purchases by the plaintiffs in the time period from  
20 1994 to 2003.

21 And so the plaintiffs purchased in that period \$2.217  
22 billion in TDI. And the other number over here, this is the  
23 estimate of the amount to which they overpaid, the overcharges  
24 associated with TDI, and it's \$272.6 million. And that is  
25 repeated for MDI and for polyols.



1           The overcharge percentage in the middle is just -- in  
2       case it's useful to see as a benchmark what these percentages  
3       are, you can take the overcharges and divide by the total  
4       purchases to get these percentages in the middle.

5           The total at the bottom shows you total purchases by  
6       plaintiffs from the alleged conspirators in this period of time  
7       of \$5.2 billion, and the estimated overcharges of \$608 million.

8       Q   And we're going to at the very end of this presentation  
9       talk about exactly how that number was calculated.

10           Is the \$608 million the number that Dr. Raiff provided  
11       in his last set of numbers?

12       A   No.

13           So, when Dr. Raiff did his work initially, he had a  
14       somewhat higher number, but I -- I think it's appropriate to  
15       make an adjustment that I want to talk to you about. So my  
16       opinion is that the appropriate overcharge number is 608  
17       million, and we'll talk about that this morning.

18       Q   So the average overcharge market-wide is what?

19       A   You're asking --

20       Q   The total, the red one. No, the percentage.

21       A   The percentage overall is 11.7 percent.

22       Q   Are there academic studies regarding the amounts of  
23       overcharges that are found in successful conspiracies?

24       A   There are. There are a number of papers in the economics  
25       literature that look back on price-fixing conspiracies that

1 have been discovered and look at what happened in the course of  
2 those conspiracies, and a number of them developed estimates of  
3 what the overcharge percentage was in those past conspiracies.  
4 And it's not uncommon in those studies to see numbers between  
5 10 percent and 30 percent.

6 Q So as an economist, does this 11.7 percent number tell you  
7 anything about the effectiveness of the alleged conspiracy in  
8 this case?

9 A It tells me that it was effective, but -- but, you know,  
10 not among the most effective conspiracies. It had an effect  
11 but not at the high end.

12 Q Okay. If we can then now start actually turning and diving  
13 into your four opinions. I'm going to ask you about the very  
14 first one --

15 A Sure.

16 Q -- which was the industry was prone to successful  
17 collusion.

18 I think the first thing we want to talk about is:  
19 What is collusion?

20 A Again, collusion is an agreement among suppliers to  
21 suppress competition.

22 Q And what is -- is that the opposite of competition?

23 A I think of it as the opposite of competition, yes. So you  
24 have here on this slide, competition is a process that would  
25 lead to lower prices.

1 Q Could you explain the process for the jury?

2 A Yeah. Competition is suppliers acting independently, not  
3 attempting to coordinate with one another.

4 Q Do the buyers play a role in that process?

5 A The buyers play a role, of course, but if the suppliers are  
6 coordinating, acting together to elevate prices, not competing  
7 against one another, then there may not be very much a buyer  
8 can do to try to secure lower prices.

9 Q How does collusion, in an economic theory, interfere with  
10 that competitive process?

11 A The collusion, the suppression of competition means that  
12 you're not going to have buyers -- sorry -- you're not going to  
13 have the suppliers being willing to take profitable  
14 opportunities to get more business, so you're not going to be  
15 able to have the usual pressure keeping prices low for the  
16 buyers.

17 Q If there's collusion does, that means there no competition?

18 A No. When I talk about collusion as a suppression of  
19 competition, you can have very effective suppression of  
20 competition and somewhat less effective, it's a matter of  
21 degree. So you can have periods of time where you're able to  
22 very effectively suppress competition and other periods of time  
23 where the attempts to suppress competition were less effective.  
24 So it's not on or off, it's a matter of the level of  
25 effectiveness.

1 Q One of the words the jury heard at the start of this case  
2 was "oligopoly." Can you explain what oligopoly is?

3 A Yes. This is a picture I often draw for my students in  
4 economics on the first day of class. Economists tend to think  
5 of markets in terms of a spectrum where at one end of the  
6 spectrum you have a monopoly. And a monopoly is where there's  
7 only one supplier, there's just one firm, just your monopolist,  
8 and so there's no competition there. And at the other end of  
9 the spectrum we have perfect competition. It's a world where  
10 you have very many suppliers each of which is small relative to  
11 the market, so you have lots of small producers. That's a  
12 world of perfect competition. And then economists use the  
13 label oligopoly for the things in the middle.

14 So an oligopoly is a market where you have more than  
15 one firm, but not just -- not a very large number of small  
16 firms, you've got a few significant players in the market.  
17 That would be a oligopoly.

18 Q You said in the beginning of this case that in oligopolies,  
19 when somebody takes price up, a producer takes price up, by and  
20 large other producers go along with it.

21 Do you agree with that?

22 A No, I don't. So in an oligopoly, if there's competition  
23 among firms in an oligopoly, if other firms, if your rivals  
24 attempt to raise your price and you see a profitable  
25 opportunity to undercut them to capture business, you would

1 expect in an oligopoly that firms would attempt to undercut one  
2 another.

3 Q Why don't producers have an incentive to always match a  
4 price increase announcement and everybody wins?

5 A Remember, in the absence of an agreement, if your rivals  
6 are raising their price, you have an opportunity as a  
7 competitor to come in at a slightly lower price and potentially  
8 capture a significant amount of business. That's the force of  
9 competition.

10 Q Now, there were a number of other factors that you  
11 previewed when you were talking about the first opinion. I'd  
12 like to see if you could go through them for the jury.

13 A Sure.

14 Q Could you tell the jury what this first one is?

15 A The first one, again, these are characteristics of -- this  
16 particular -- the industry here, the urethanes industry, that  
17 lead to the conclusion that if there were a conspiracy, it  
18 would be reasonable to expect they might have an effect on the  
19 prices. And the first one here is "Alleged cartel participants  
20 included all market leaders and controlled nearly all urethane  
21 production."

22 MR. BERNICK: Excuse me, your Honor. If I could just  
23 be heard at sidebar with respect to this chart?

24 THE COURT: All right. Let's go.

25 (At the sidebar.)

1 MR. BERNICK: I am sorry to interrupt things. I don't  
2 like to do that.

3 THE COURT: That's okay.

4 MR. BERNICK: So the chart indicates and I was handed  
5 a set of slides before it began that did not --

6 THE COURT: We can talk. We can talk. We're out  
7 here. That's why we're out here.

8 MR. BERNICK: It did not include the conclusions  
9 slide, it was black.

10 THE COURT: This slide?

11 MR. BERNICK: The slide that's now -- the slide that  
12 was being shown --

13 MR. JOHNSON: We --

14 THE COURT: Wait.

15 MR. BERNICK: Just wait.

16 That's okay.

17 THE COURT: Go ahead.

18 MR. BERNICK: So I'm saying, when it saw it flash up  
19 and heard her testify, her second conclusion is that there was  
20 a conspiracy that was effective in raising prices.

21 THE COURT: Right.

22 MR. BERNICK: That is completely outside the scope of  
23 Dr. Raiff's opinion, it's completely outside the scope of her  
24 own opinion, including the opinion that she indicated during  
25 the course of the Daubert proceeding. She did no liability

1 analysis, she did no --

2 THE COURT: You're talking about a slide she's already  
3 testified to?

4 MR. BERNICK: Well, it's up there still. No, it's up  
5 there right now.

6 So all I want to say is that they can go forward, but  
7 this is completely outside the scope of the Order appointing  
8 her or allowing her to proceed, which is that she solely  
9 endorsed the opinions and the approach of Dr. Raiff.

10 There is no -- I mean, it's down in black and white in  
11 her own deposition. She did not do a liability analysis, did  
12 not, and she simply assumed a conspiracy.

13 THE COURT: Okay.

14 MR. BERNICK: Now -- I'm sorry.

15 THE COURT: Finish up.

16 MR. BERNICK: So, the most that they've gotten is that  
17 she now attributes post-model, she have attributes the variance  
18 to evidence of the conspiracy as a whole, which is different  
19 from what I'm saying, attributes it to a conspiracy that she's  
20 found. That slide says: "There was an effective conspiracy  
21 that was effective in raising prices."

22 THE COURT: Go ahead.

23 MR. MARTIN: It's taken straight out of one of the  
24 reports. The language is literally verbatim from one of the  
25 expert reports, Dr. Raiff's reports, there was an effective

1 conspiracy. It's in his reports. And if you need to see it I  
2 can find it.

3 THE COURT: Do you have -- I looked at the -- I don't  
4 recall.

5 Do you have that?

6 MR. MARTIN: I believe it's in the reply report. I  
7 have to go back and get it. Give me two seconds. Do you mind  
8 if I go back?

9 THE COURT: What's that?

10 MR. MARTIN: Do you mind if I go back and get it?

11 THE COURT: Do you have it back there?

12 MR. MARTIN: Yes, because there is the wrong one.

13 (Mr. Martin steps away from sidebar, and returns.)

14 THE COURT: What do we have?

15 MR. MARTIN: We have a number of them but this is the  
16 easiest to read.

17 THE COURT: I see what you're -- you're objecting.

18 (Reading) These low probabilities are evidence that there was  
19 an effective conspiracy that caused plaintiffs economic harm in  
20 the amounts estimated by my models.

21 And your arguments is that this graph says there was a  
22 conspiracy --

23 MR. BERNICK: Yes.

24 THE COURT: -- instead of saying it was evidence --

25 MR. MARTIN: But this has an effective conspiracy.



1 She focused on "effective."

2 MR. BERNICK: But there was an effective conspiracy.

3 All she can address is based on the assumption that  
4 she was given. She didn't do did liability analysis. So  
5 they've used this language which does deal with impact, but the  
6 way that it's worded and that way she's now testifying suggests  
7 that she has an opinion. So I'm objecting --

8 THE COURT: No, you can deal with this on  
9 cross-examination.

10 MR. BERNICK: Okay.

11 THE COURT: Okay

12 MR. MARTIN: Thank you.

13 THE COURT: If there are any subtle differences there,  
14 and you think there are, you can deal with -- you think they're  
15 more than subtle?

16 MR. BERNICK: It's her own words.

17 THE COURT: -- deal with it on cross. I don't think  
18 it's so misleading.

19 MR. BERNICK: Then I don't have to keep on objecting?

20 THE COURT: No.

21 MR. BERNICK: Okay.

22 (In open court.)

23 THE COURT: You can proceed.

24 THE WITNESS: Can I just ask a question? There's like  
25 a ticking sound. It's kind of irritating.

1 THE COURT: There's a sound?

2 MR. MARTIN: It's like a metronome.

3 THE WITNESS: If there's nothing to be done about it,  
4 I just --

5 MR. JOHNSON: We have suffered from that on and off  
6 throughout the trial.

7 THE COURT: Yeah.

8 Hold on. Can you hear?

9 THE WITNESS: No, it stopped now.

10 THE COURT: I think it's the ventilation.

11 THE WITNESS: Oh, okay.

12 THE COURT: I think it goes on and off depending on  
13 the temperature. That's the best I can figure out.

14 All right.

15 MR. MARTIN: Or leprechauns.

16 THE COURT: That was last week.

17 (Laughter.)

18 BY MR. MARTIN:

19 Q I'm sorry. Were we still talking about this opinion, or  
20 had we moved to the next one?

21 A I think we were on the first one here, "Alleged cartel  
22 participants included all market leaders and controlled nearly  
23 all urethanes production."

24 Q Can you explain what that means?

25 A Yes. Take an example: Suppose that -- suppose that you

1       were trying to get your house painted or your roof fixed and  
2       you were looking -- you were getting quotes from contractors  
3       for prices. Suppose that there were half a dozen contractors  
4       that would be candidates, and suppose that two of them, just  
5       two of them decided to get together and agree to raise their  
6       prices. You're just going to use one of their competitors.  
7       They're not going to be effective at being able to raise their  
8       price because you have other options.

9               So if you're trying to be effective in elevating the  
10       price, it's going to be helpful if you control a large portion,  
11       all or a large portion of the market.

12              And that was something that was true in urethanes  
13       where the alleged cartel participants included all of the  
14       market leaders and controlled nearly all of the urethanes  
15       production.

16       Q     Could we ask you to look at the next part of your opinion  
17       there. It helps if I push the button.

18       A     Thanks. The next one says, "Entry by new suppliers was  
19       difficult, expensive and time consuming in the urethanes  
20       industry."

21              So again, going back to our roofing contractors, now  
22       suppose that all six in your area agree to get together and  
23       raise the prices. If it's relatively easy for someone else to  
24       enter the area and offer you a good price, then again it's  
25       still going to be hard for those firms to succeed in elevating

1 the prices.

2 But in the urethanes industry, entry by new suppliers  
3 was difficult, expensive and time consuming. I think you've  
4 heard some about the large chemical plants that are used to  
5 produce these products. It's what an economist would refer to  
6 as "barriers to entry." There were barriers to new firms just  
7 coming in in a short period of time and competing.

8 Q You stole my question.

9 Could we have the next one.

10 A The next one says: "Urethanes are commodity type  
11 products."

12 And so a commodity type product is, the products are  
13 relatively interchangeable across producers. You think of  
14 commodities as flour and sugar and things that are a  
15 well-defined commodity. So then you have the core TDI, MDI and  
16 polyols products were relatively interchangeable across the  
17 producers.

18 That means that the producers are trying to get  
19 together and agree to elevate prices it makes sense for them  
20 just to agree on a common price increase because the products  
21 are essentially the same cross the producers so they can agree  
22 on a single common increase in price.

23 Q Look at I think the last aspect of that opinion.

24 A "Poor substitutes for most applications of urethanes."

25 This is going to the buyers' side. So the buyers in

1       this industry, if you want to make flexible foam, you really  
2       need TDI and polyols. So if the suppliers of these urethanes  
3       products raise price, there's very little that the buyers can  
4       do. There aren't good substitutes that they could buy  
5       instead -- they couldn't buy something instead of TDI and still  
6       be able to make the flexible foam.

7               So in this industry there are poor substitutes. The  
8       buyers, they're really kind of stuck if they can't get access  
9       to these chemicals.

10      Q     I was wrong, there's one more.

11      A     "Opportunities to communicate."

12               As you can imagine, if the suppliers are attempting to  
13       coordinate among themselves, it's going to be helpful to have  
14       opportunities to communicate.

15      Q     Do you see evidence of opportunities to communicate in the  
16       record of this case?

17      A     Yes. There's evidence in the record of telephone calls and  
18       meetings and direct communication, and also trade associations  
19       that provided opportunities for communication and meetings and  
20       a trade press.

21      Q     In the academic literature, is there discussion about how  
22       trade associations play a role in price-fixing conspiracies?

23      A     There are certainly legitimate purposes for trade  
24       association meetings but there's also a literature in economics  
25       that looks at the role that trade associations have played in

1 past conspiracies that have been discovered as facilitating  
2 communication among the cartel members.

3 Q So when you say that the industry structure was conducive  
4 to collusion, does that mean that there was a conspiracy?

5 A No, it doesn't mean there was a conspiracy. This is all  
6 about whether, if there were a conspiracy, does it make sense  
7 that they would be able to effectively elevate the price.

8 Q Okay. So let's turn to your second opinion, if we can.

9 A Yes. There was an effective conspiracy that caused higher  
10 prices market-wide for urethane chemicals.

11 Q So in this case, the assignment of Dr. Raiff was to  
12 estimate overcharges. Is that a common assignment in  
13 price-fixing cases?

14 A Yes.

15 Q Are there ways to deal with that?

16 A Yes, there are well accepted ways of using econometric  
17 techniques to estimate whether the prices were elevated above  
18 what they otherwise would have been.

19 Q How does econometrics help?

20 A Econometrics is going to allow us to take a systematic and  
21 scientific approach to the data and use these statistical  
22 techniques to understand and make predictions about what the  
23 prices would have been in the absence of the conspiracy.

24 Q Why do that when you can just look at the documents and the  
25 testimony and evidence of negotiations?

1 A Again, that kind of look -- it's going to be hard from that  
2 kind of look to get a measure of whether the prices were  
3 actually effected and the extent to which they're affected.  
4 And by using econometrics we'll be able to bring in all of the  
5 data and analyze it in a systematic way.

6 Q Was econometrics used in this case?

7 A Yes.

8 Q How?

9 A It was used to develop an estimate of what the prices would  
10 have been in the absence of the conspiracy.

11 Q Was there something called a model created?

12 A A model was developed. An econometric model was developed,  
13 and that model was used to predict what the prices would have  
14 been if there hadn't been a conspiracy.

15 Q Can you just describe what a model is for the jury?

16 A Yeah.

17 Economists use the word "model" to signify that the  
18 way prices are formed is a complicated process, but we're going  
19 to distill the key elements, how the prices are responding to  
20 the economy, to the cost factors, the demand factors and the  
21 economy; the key drivers of these prices.

22 Q And the model in this case was called a benchmark product  
23 model?

24 A Yes.

25 Q So are there standard ways to develop --

1 A Actually there are three. There was a benchmark product  
2 model for TDI, one for MDI, and one for polyols.

3 Q And are there standard steps that are used to develop a  
4 benchmark product model?

5 A Yes.

6 Q I'm going to ask you to look to those.

7 A I have a slide that summarizes these.

8 Q I'm asking --

9 A These are the steps associated with developing the  
10 benchmark model.

11 Q So I'm going to ask you one-by-one questions as we go  
12 through this. Okay?

13 A Yes.

14 Q The first one is "Collect and organize the data."

15 How much data are we talking about?

16 A We're talking about hundreds of thousands of transactions  
17 for these chemicals.

18 Q What kind of transactions, all different kind of -- how  
19 many products?

20 A Hundreds of products. And these are all the transactions  
21 for the time period we have between -- all the sales by the  
22 alleged conspirators.

23 Q How did you organize that data?

24 A I had the data in electronic form, so I'm using computers  
25 and spreadsheets and statistical programs to help me organize



1 and analyze the data.

2 Q The next step is to choose an appropriate benchmark period.

3 I think that now it would be helpful if we can put up  
4 this board.

5 THE WITNESS: May I stand up and --

6 THE COURT: Sure.

7 THE WITNESS: Great.

8 I'm going to take the microphone in case it helps.

9 THE COURT: Is it on?

10 THE WITNESS: It is now.

11 THE COURT: You need to hold it close to your mouth in  
12 order for it to pick up.

13 THE WITNESS: I'll do my best.

14 THE COURT: That's good.

15 A (Continuing) I think you saw a figure like this in the  
16 opening remarks but it had lines on it. We're going to add the  
17 lines as we go.

18 Q So, can you tell me, first of all, how you're going to  
19 develop the lines?

20 A Yeah. Let me just orient you to this graph.

21 So, this has years on the horizontal axis. It starts  
22 in 1992 and goes to the end of 2008. And it has identified on  
23 here the conspiracy period. So the conspiracy is alleged to  
24 have run from the beginning of 1994 through the end of 2003.  
25 So that's the yellow shaded area there.

1 Q So you had all of this data, you organized this data. How  
2 did you convert that into something useful?

3 A So what I'm going to do with -- we're just going to talk  
4 about TDI for a moment, and we'll run through TDI and then  
5 we'll need to talk about MDI and polyols also.

6 But the first thing I did was take all of the  
7 transactions and calculate the weighted median. So I'm going  
8 to look at the price that's the middle price or the central  
9 price for this TDI 80/20 product.

10 TDI 80/20 is -- I'm not sure how much detail you've  
11 gotten into, but there are some different TDI products. The  
12 main one where most of the volume is, is called TDI 80/20.  
13 It's the biggest product by volume. It was sold through this  
14 whole period of time. It's a commodity-like product, and it  
15 serves as kind of an anchor for the other TDI prices.

16 Should we put the price line on?

17 Q If that would help you, let's do that.

18 Tell the jury what this is.

19 A The blue line here is the weighted median price for TDI  
20 80/20. So looking at all of the alleged conspirators'  
21 transactions in this period of time and looking at the weighted  
22 median price, and you can see this blue line with all the  
23 prices through here, it's denominated in dollars per pound  
24 here. And -- yeah, I'll just stop there.

25 Q Why use median prices?

1 A The prices at which these transactions happened, all the  
2 transactions weren't at exactly the same price, there were some  
3 different prices paid.

4 If you look at -- if you look at the prices paid  
5 weighted by volume, almost all of the volume of transaction  
6 happens in a band right around this blue line. So this  
7 captures where the weight of all the transactions happened.  
8 And there's some transactions that happened at some higher  
9 prices and a few at lower prices, but almost all the volume of  
10 transactions are happening right around this blue line.

11 Q In general, is the use of median prices a standard way to  
12 implement an econometric analysis?

13 A It's a standard way to approach this.

14 Q What about in this case, did it make sense in this  
15 case?

16 A Oh, yeah, it makes sense in this case. We're thinking  
17 about -- this is the market-wide price. You probably heard  
18 about price announcements that would be targeted at market-wide  
19 prices. This gives us a sense of where the market was at each  
20 point in time.

21 Q How many transactions are used to develop that line?

22 A There are hundreds of thousands of transactions in that  
23 line.

24 Q And they weren't all at the same price. Right?

25 A No, they weren't at the same price. The weight of the

1 volume was right around this line. You see some small volume  
2 purchases at some higher prices.

3 Q So before we go further, the thing that sticks out is the  
4 jump up there in 2006. Can you explain for the jury what's  
5 happening there?

6 A Yeah, we should talk about this. I know it kind of stands  
7 out when you look at the graph.

8 This -- this jump is happening in 2005. And in 2005,  
9 in the fall of 2005 -- I don't remember -- but there were two  
10 big hurricanes that hit the Gulf Coast. Hurricane Katrina hit  
11 New Orleans and Hurricane Rita hit near Houston along the Gulf  
12 Coast. And that area along the Gulf Coast is where a lot of  
13 the manufacturing for this product is. It's where their  
14 refineries are along the Gulf Coast.

15 And so the hurricanes had a big impact, direct impact  
16 on the production facilities and also on the transportation  
17 network and their ability to get materials in and out.

18 So there was a big disruption as a result of the two  
19 hurricanes. And also in this period of time there was a  
20 reduction in the number of manufacturers of this product from  
21 five down to three, and a loss of about 30 percent of the  
22 capacity in the market.

23 And those are the kinds of changes that you might  
24 expect to affect prices. There are also some sharp increases  
25 in the input factor, the chemicals that are used to make these

1 products. So there's some things going on in that period of  
2 time that we're going to need to pay attention to later.

3 Q If we look just at this line, just at this line, can you  
4 draw an inference whether or not there was an effective  
5 conspiracy during the alleged period?

6 A Looking just at that line, no. I mean, you can't tell  
7 whether there's a conspiracy by looking at that line, you need  
8 to know what the prices would have been without the conspiracy.

9 Q Let's talk then about the next step, which is "Choosing the  
10 appropriate benchmark period." Can you explain why that's so  
11 important?

12 A Yes.

13 In order to get an estimate of what prices would have  
14 been in the absence of a conspiracy, we're going to need to  
15 look at a period of time where there was no conspiracy. We're  
16 going to need to have a benchmark, we're going to need to have  
17 a control period and look at what the competitive process looks  
18 like when there's no conspiracy and then use what we learn  
19 there to estimate what the prices would have been in this  
20 conspiracy period if the competitive process had been the same  
21 as it was outside the conspiracy period.

22 Q How was the benchmark period chosen?

23 A I had available the data from 1992 through the end of 2008.  
24 This period in here from '94 through the end of 2003, in that  
25 period there's evidence of conspiracy, so I -- I don't want to

1 use that as my benchmark period. But there are these periods  
2 '92, '93, the white period to the left and the white period to  
3 the right that offer a possibility to use those as the  
4 benchmark period. And I looked at the evidence, and I don't  
5 see evidence of conspiracy affecting this earlier period, I see  
6 evidence that the conspiracy was essentially at an end in late  
7 2003, and so that leaves these periods before and after as a  
8 control period, as a period when they're unlikely to have been  
9 affected by the conspiracy.

10 Q So you've chosen the benchmark period.

11 The next step is "Cost and demand variables."

12 A Yes.

13 Q So, could you talk about what those are? This is a big  
14 list.

15 A Yeah,

16 THE WITNESS: Can you guys see it?

17 I'm not sure they can see past the screen. It's over  
18 here, too.

19 A (Continuing) Economics tell us that these prices are going  
20 to be related to the underlying cost and demand factors, and  
21 so --

22 Q Do you want this?

23 A That would be great.

24 THE WITNESS: Is it easier for you guys to look at the  
25 TV or to look -- the TV is better?

1 Q I'll take that back. I need it.

2 A All right. This list has some different categories of  
3 prices -- of cost and demand variables here.

4 This first group, these are the chemicals that are  
5 used to make TDI, MDI and polyols.

6 Okay. So, toluene is a chemical that's used to make  
7 TDI. If you want to make TDI, you need this toluene. And so  
8 how much it cost to buy the toluene is going to affect how much  
9 it costs you to make TDI.

10 So we'll have as cost factors: The toluene; you need  
11 benzene to make MDI; you need propylene to make polyols. And  
12 these are other chemicals and inputs that you're going to need  
13 to make these products. And so the prices of these inputs is  
14 going to matter for how much it costs to make the urethanes  
15 chemicals.

16 I have wages down here. You have to pay your work  
17 force; and then last month's prices.

18 In this industry, I think you probably have seen some  
19 evidence that there would be price increase announcements  
20 issued, and so they would be benchmarked against what the price  
21 was in the past.

22 Price is going up by \$.06 or \$.03, relative to the  
23 previous price. And so we'll have last month's price in here.  
24 And think about how these cost demand factors are going to  
25 move -- how they're going to cause the price to change.

1           We need demand, so we need to think about what these  
2 chemicals are used for. They're used to make flexible foam,  
3 sealants, they're used in building materials, they're used to  
4 make oriented strand board, they're used in the cushions in the  
5 seats. And so we have a number of demand variables here.

6           This is an index of U.S. carpeting and furniture  
7 production.

8           This next one includes appliances. MDI in particular  
9 is used in the insulation in some of the household appliances;  
10 U.S. motor vehicle assemblies; the foam is used in the cars in  
11 the automobile seats; U.S. housing starts, that catches the  
12 building materials that these are used in too.

13           So you've got cost factors, we've got demand factors.

14           The next couple here relate to the things that  
15 happened in 2005. So we're going to need to have variables in  
16 there to take into account the hurricanes and the effects in  
17 2005.

18           And then the last three are capturing macroeconomics  
19 effects, the overall economy. So there are two exchange rates,  
20 and this 10-year Treasury rate, that's an interest rate. So  
21 it's a measure of the overall economy.

22           This list also has -- you see the asterisk on -- some  
23 of these variables have an asterisk next to them and those are  
24 labeled the bottom as core variables. So we're going to need  
25 to draw the model, so we're going know need to make a choice



1 about which variables to include in the model.

2 We're going to need to keep --

3 Q Well, let me just ask you: Are these all the variables  
4 that were considered?

5 A No, a larger set of variables was considered. It was  
6 distilled down to this as the relevant set of variables to use  
7 in the model.

8 Q Then were all these variables actually used to develop the  
9 model?

10 A They were all used for the model, yes.

11 Q Was the list narrowed down for particular products in any  
12 way?

13 A Oh. For example, where it has just TDI in parenthesis,  
14 here the toluene is only relevant for TDI, so it would be used  
15 in the TDI model, not in MDI or polyols.

16 And benzene is for MDI. So not all of these variables  
17 are relevant for all of TDI, MDI and polyols. You use the  
18 right ones for each product.

19 Q And what's the difference between a core variable and the  
20 other ones?

21 A Yes. We have to keep in mind what we're trying to do here.  
22 We're trying to predict what prices would have been in the  
23 absence of a conspiracy. So we're going to develop a  
24 predictive model. And we know from economics that when you're  
25 trying to develop a predictive model you don't want to just

1 throw everything into the model.

2 So, think about if you're making a cake. You know you  
3 want sugar and flour and eggs, and then you can make a  
4 chocolate cake or a strawberry cake or a lemon cake. So you're  
5 going to start with your core ingredients. And then you need  
6 to make some choices about other ingredients. And you don't  
7 want to throw everything in; that's a terrible cake. But you  
8 want to choose wisely the other ingredients to put in.

9 The variables here with the asterisk, those are our  
10 "flour" and "sugar" and "eggs," those are the core ingredients.  
11 And then we need to choose which other variables to include to  
12 get the best most reliable prediction.

13 Q How do you choose them?

14 A Thank you.

15 Dr. Raiff used a statistical technique that's called  
16 AIC. That's designed to provide an objective way of  
17 determining which variables to include to get the best  
18 predictive model. AIC -- AIC stands for Akaike Information  
19 Criterion. It's a well-accepted technique in the literature.  
20 It provides -- it makes sure that you are not biasing the  
21 choice, you're not using your own opinion, you have an  
22 objective criterion for determining which variables to include  
23 in the model. And so that's what was applied to select, in  
24 addition to these core variables, which additional ones to add.

25 You don't want to throw everything in, so you need

1 some way to discipline what the choice -- which variables are  
2 going to be included.

3 Q I have one more question on that. But before that, you  
4 used the word "predictive model." Could you explain what that  
5 means? Because this doesn't look like you're making a  
6 prediction.

7 A Okay, that's a good question.

8 Q Thank you.

9 (Laughter.)

10 A Normally when you think of predicting, you think of having  
11 some data and then estimating what's going to happen in the  
12 future. That would be a prediction.

13 Okay. I'm using the word "prediction" here, but what  
14 I mean is, we're going to use data from before and after to  
15 estimate what's going to happen in the middle; so a middle  
16 prediction, but I'm going to call it a prediction.

17 But what I mean here is we're going to use data from  
18 the benchmark period before and after to estimate what's going  
19 to happen in the middle. What would have happened in the  
20 middle if the competitive process had been the same in the  
21 conspiracy period as it was in the benchmark period.

22 Q Now back to the other question: The AIC, how does it  
23 actually work? Is it somebody goes through it? How does that  
24 happen?

25 A No. The way AIC, the procedure, what AIC does is it runs

1 the model with all the different possible combinations of  
2 variables and provides a score for each of those relative to  
3 their predictive performance and selects the combination of  
4 variables that gives you the best predictive performance. You  
5 use a computer -- a computer would do the work.

6 Q Okay. Now, we've got this list here, you've explained how  
7 they are chosen. There's one that's not there. That's  
8 capacity. The jury has heard a lot about capacity. Why wasn't  
9 capacity in here?

10 A Good question.

11 Oh, good, I have a slide.

12 So as this slide says, as a general principle, factors  
13 under control of the alleged cartel should not be included as a  
14 variable.

15 Remember what we're trying to do, we're trying to  
16 estimate what the prices would have been if there wasn't a  
17 conspiracy. If you include variables that were under the  
18 control of the conspiracy or manipulated by the conspiracy,  
19 you're not going to get an estimate of what the price would  
20 have been in the absence of a conspiracy.

21 So it's understood in the economics literature that  
22 for an exercise like this, you wouldn't want to include  
23 variables, something like capacity that's under the control of  
24 the conspiracy.

25 Q That's a theoretical view that economists hold?

1 A It is.

2 Q Now, what about in this case; was there any reason to  
3 exclude capacity in this case, based on your evaluation?

4 A In this particular case I saw evidence that suggested  
5 agreement among the alleged conspirators to restrict capacity.  
6 So in this particular case I would have a special concern about  
7 including a variable like capacity in the model.

8 Q As an economist, what actually drives capacity decisions  
9 that businesses make?

10 A We would normally think of the kinds of things that are  
11 going to drive a firm's capacity choices. We think of the cost  
12 and demand factors that would drive the capacity forward; the  
13 same factors that are going to affect prices. So to the extent  
14 the model is going to capture cost and demand factors, and  
15 these are the same factors that are going to affect capacity  
16 choices, we expect that to already be accounted for in the  
17 model.

18 Q So the title of this slide is "The model accounts for  
19 capacity."

20 What does "accounts for" mean?

21 A It means that whatever effect there is of capacity on  
22 prices, that's already being captured by the other variables  
23 that are explicitly included in the model.

24 Q Was any test done to confirm that the model does account  
25 for capacity?

1 A Yes. Remember I talked about the different reports, so I  
2 had the Dr. Raiff report and he had a model. And he provided  
3 that -- that model was provided to Dow's economic experts.  
4 They raised the question about whether capacity should be  
5 included in the model.

6 So, Dr. Raiff, although he didn't include it for the  
7 reasons we already talked about, since he faced that criticism,  
8 the concern that maybe it should be included, he put it in the  
9 model; and when he put it in the model, the results didn't  
10 change. So that tells me as an economist that whatever  
11 contribution there was of capacity to prices, that was already  
12 being captured by the variables that were already in the model.

13 MR. MARTIN: Your Honor, we're going to turn to the  
14 next step of the thing. I don't know when you want to have a  
15 break, but that this probably be another ten minutes.

16 THE COURT: Dr. Marx, are you okay for another 15  
17 minutes or so?

18 THE WITNESS: Definitely, yes.

19 THE COURT: We'll go to about 10:15.

20 MR. MARTIN: Thank you.

21 Q The next step, the benchmark -- the next step of developing  
22 the benchmark product model is to develop a mathematical  
23 equation. Can you explain what that means for the jury?

24 A Yes.

25 We're going to need to develop an equation that tells

1 us, for the benchmark period, how did these cost and demand  
2 factors generate these prices, and we're going to use a  
3 statistical technique called regression. So it's a technique  
4 that's going to allow us to take the data about the cost and  
5 demand factors and the data about -- about prices and estimate  
6 what that relationship is between the cost and demand factors  
7 and the prices in the benchmark period, in the white periods of  
8 time there.

9 Q Is regression something that's only used in price-fixing  
10 cases?

11 A No. Regression is a standard tool used in statistics.  
12 It's used in medicine, and agriculture, in estimating housing  
13 prices. It's the kind of -- that's the right statistical  
14 technique to be using to relate these underlying costs and  
15 demand factors to these prices.

16 Q So, for those of us who are not that well versed in  
17 regression, could you show us an equation? We.

18 Have a marker, we have paper. You're all set.

19 A Yeah.

20 Let me just give you an idea of what this equation is  
21 that we're going to be estimating with regression. What we're  
22 interested in are prices. So we're interested in -- let's  
23 write -- let's focus on TDI here.

24 MR. MARTIN: Do you want me to turn that for you?

25 THE COURT: I can see it. Is it dark enough?

1 Ladies and gentlemen, can you see it on the board?

2 Okay. I can see it, too.

3 A I'll try to use my good teacher handwriting so we can  
4 understand this.

5 So, the first thing we need is we're interested in the  
6 competitive prices. Let's write competitive price this month.

7 And we're going to think of the competitive price this  
8 month as being equal to some number, which we'll have to figure  
9 out, times the competitive price last month, with adjustment.

10 So we'll have to have some adjustment for changes in  
11 the price of toluene.

12 And we're going to need adjustments for demand, so  
13 we'll need some number times. Let's work with auto. So auto  
14 demand.

15 And we're going to need all the other cost and demand  
16 factors that we're going to put in this model, so we'll have  
17 plus more cost factors; plus more demand factors.

18 And what the regression, what the statistical  
19 techniques are going to tell us are what numbers go in these  
20 boxes. They're going to give us an equation that tells us: If  
21 we know competitive price last month, we know the input cost of  
22 all the relevant cost factors, we know the demand factors,  
23 we'll be able to estimate what the competitive price this month  
24 should be.

25 Q What data do you use to develop this equation?



1 A We're interested in understanding the competitive process  
2 in the benchmark period. So we're going to use the data just  
3 from the white periods of time, just from the benchmark period  
4 to estimate this equation to use the regression technique to  
5 give us this equation, and then we'll use this as capturing the  
6 competitive process in the benchmark period and ask: What does  
7 it tell us about what prices should have been in the conspiracy  
8 period?

9 Q So once you've got the equation developed, the next step is  
10 to apply the model to the conspiracy period. Right?

11 A Yes.

12 Q Would that help if I flip the page?

13 A The best way to explain this is with the next slide.

14 All right. So now we've got red dots.

15 The red dots on this are showing the prediction of  
16 what prices would have been using the equation that tells us  
17 what the competitive process looks like in the benchmark  
18 period.

19 So notice that we have to -- to start this prediction,  
20 we have to tell it what the competitive price was last month.  
21 So we have to start this somewhere. And what this red line is  
22 doing is starting with the price from December of 1993 and  
23 saying, starting from this price in December of 1993, let's  
24 ask: What would our prediction tell us the price should be,  
25 the competitive price should be in January of 1994?

1           And then we'll feed in this red dot our prediction of  
2           the competitive price in January of 1994 back into the equation  
3           and ask what the price for February would be. And we're going  
4           to roll forward one month to the next and ask what the  
5           prediction is going forward.

6           So it's important here that in this prediction we're  
7           not going to use the blue line. We're not using the actual  
8           prices, we're only rolling forward one month to the next using  
9           last month's predictive competitive price to see what next  
10          month's predictive competitive price will be. And that's going  
11          to roll forward, and we'll get a prediction of what the prices  
12          would have been in the conspiracy period if the competitive  
13          process had been the same as in the benchmark period.

14          And when you do this, this -- remember, this red line,  
15          it's never seeing what the blue line is. It doesn't know what  
16          the blue line is here, it's just making a prediction one month  
17          to the next. And when you get to the end here, in order to  
18          calculate the overcharges, we only need the prediction during  
19          the yellow period. But it will be interesting for us in order  
20          to assess the reliability of the model to keep the prediction  
21          going and see what it would have predicted out here in the  
22          benchmark period after the conspiracy.

23          And you see that even after all this time it matches  
24          up well out here. It's doing a good job of capturing the  
25          competitive process both -- or here in the period after the

1 conspiracy.

2 Q So when we looked at the list of variables, one of them was  
3 called "Last month's price."

4 A Yes.

5 Q When you're rolling this model out, was it last month's  
6 price or last month's predicted price?

7 A It's last month's predicted price. Because remember, we  
8 want to ask what the competitive price this month is based on  
9 the competitive price last month. So we're going to use what  
10 was predicted as the competitive price last month.  
11 So this is using last month's predictive price to move forward.

12 Q So after you start it, the very first red dot there, is the  
13 blue prices, the actual prices ever used in the equation again?

14 A No.

15 Q Now, this runs starting in 1994. Was there a check made to  
16 see what would happen if it was started earlier?

17 A Yes.

18 Another thing you can do to make sure that your model  
19 of the competitive process is doing a good job and you've done  
20 a good job capturing the competitive process is to start the  
21 prediction back here at the beginning and see how it does. So  
22 that's on this next slide.

23 Q Can you explain what's going on here?

24 A Yes. So now you've got both green little dashes and red  
25 dots. The green is starting the prediction from the very

1 beginning. So we give it one price from the blue line, give it  
2 January of 1992 and launch the prediction from here. And you  
3 see that it's doing a good job of capturing the competitive  
4 process here at the beginning; and here at the end also doing a  
5 good job of capturing the benchmark prices.

6 So that's a measure of the reliability of the model.  
7 It helps us see that we've got a good model that is doing a  
8 good job of capturing what we wanted it to, and that's the  
9 competitive process in the benchmark period.

10 Q Now I've heard the term "model results." What's the model  
11 results here?

12 A The model results are what's going to be relevant for our  
13 calculations. It is this distance; the difference between what  
14 the prices actually were, the blue line, and what they would be  
15 predicted to do be if there had been no conspiracy.

16 Q So the gap gets wider in various time periods. Do you have  
17 an opinion why that is? And narrower.

18 A Yes.

19 As we know from looking at past conspiracies that have  
20 been detected, you often see periods where the conspiracy is  
21 relatively more effective or relatively ineffective, and you  
22 see that happening here. You see periods where the conspiracy  
23 appears to be relatively more effective at getting prices up or  
24 keeping prices up relative to what they otherwise would have  
25 been; and then other periods of time, for example, here in

1 2001-2002, where it appears -- in this period of time the  
2 predictive price matches up exactly with what the actual prices  
3 were.

4 And remember, this line didn't know what the blue line  
5 was. It wasn't connected to the blue line. But the prediction  
6 is right on top of what the actual prices were. And that  
7 suggests that this is a period of time where the conspiracy was  
8 not effective in that period of time.

9 So seeing evidence of what looks like more competitive  
10 conduct in that period of time wouldn't be particularly  
11 surprising given this prediction.

12 Q So there are some periods of time, the jury has heard a  
13 little bit about right here, where there's an increase, maybe  
14 there's an increase here. Does the model explain why those  
15 prices go up, the actual prices?

16 A No. So, if you look at these increases right here, you see  
17 this is a period of time where the model, based on the cost and  
18 demand factors that were in place at that period of time, the  
19 model predicts basically flat prices. But what you see in the  
20 actual prices are these spikes up. And this is a period of  
21 time here where you see the model predicting down or flat  
22 prices, but you see the actual prices bumping up.

23 Q Do you have an opinion as to why there's a difference  
24 between the actual and the predictive price lines?

25 A I attribute this difference between the actual prices and

1 the predictive prices to the effects of the conspiracy.

2 Q Did you perform a statistical analysis of the effectiveness  
3 of -- we haven't seen any price increases. There's been no  
4 discussion of price increases.

5 A The announcements?

6 Q Yeah. Did you do a statistical analysis of the price  
7 announcements?

8 A No, I didn't do a statistical analysis of the price  
9 increase announcements.

10 Q Why not?

11 A Remember what I was asked to do or what Dr. Raiff's  
12 assignment was? The question was: Was the conspiracy  
13 effective? And if so, did it elevate prices relative to what  
14 they otherwise would have been? And if so, by how much?

15 And in order to answer that question, I didn't have to  
16 answer the different question, different but related question  
17 of trying to associate any individual price increase  
18 announcement with its particular effect. So it wasn't  
19 necessary for me to do that.

20 Q Okay. So this is -- we've been talking about TDI this  
21 whole time.

22 Have you done, or was this process repeated for  
23 polyols and MDI?

24 A Yes, I did the same thing, the same methodology again for  
25 MDI and for polyols.

1 Q So we have it on the screen.

2 A We have to look at the TV now for this.

3 So this one is CFS Polyols. So the blue line here is  
4 looking at a particular polyol product called CFS polyols. It  
5 stands for conventional flexible slab polyols. It's the  
6 biggest volume of the polyols product. It's kind of the anchor  
7 product for polyols, like TDI 80/20 is for the TDI products.  
8 So that's what the blue line is here.

9 And then taking a similar approach, estimating what  
10 the competitive process would be in the benchmark period, we  
11 have the prediction of what prices would have been in the  
12 absence of the conspiracy. And you can see for polyols,  
13 there's a period of time here at the beginning of the  
14 conspiracy where it looks like there really wasn't very much  
15 effect of the conspiracy. The predictive prices and the actual  
16 prices are more or less on top of each other in that earlier  
17 period, and that's not particularly surprising. Economists  
18 will sometimes refer to the early period of a conspiracy as the  
19 transition period, and sometimes you see a period of time  
20 before you actually see effects.

21 And it looks through here that the conspiracy was  
22 essentially able to keep prices roughly flat in a period of  
23 time where cost and demand factors would have suggested  
24 declining prices.

25 Q And let's also look at the MDI model, if we can.

1 A This is the MDI model. The benchmark product for MDI is  
2 called polymeric MDI or pMDI. It's again the highest volume  
3 product. It's kind of the anchor product for MDI. So that's  
4 what the blue line is here.

5 And we have again the prediction, and it's -- it has a  
6 similar look, similar characteristics. It performs well in  
7 terms of matching the benchmark period. Prices. It predicts  
8 prices very similar to actual prices in the early period.  
9 Again, a period of time where prices were relatively flat where  
10 cost and demand factors would have suggested declining prices.

11 You see that the kind of character of the estimates  
12 are very similar across these three products.

13 Q So I want to go back just for a moment to the polyols  
14 model. I'd like you to focus on the 2001 time period. It  
15 looks similar to TDI. Do you have an explanation for that?

16 A Right. So we're looking at here, see how the actual and  
17 predictive price match in this period just like they did in the  
18 TDI model there? And remember, TDI and polyols are often  
19 purchased together. You mix them together to make flexible  
20 foam. So the products are purchased together, they're  
21 manufactured by a lot of the same firms, and in many cases it's  
22 the same executives and the same pricing procurement officials  
23 that are involved in setting the prices for both the TDI  
24 product and the polyols product.

25 So it makes sense to me that you would see similar



1 pricing in these two models.

2 MR. MARTIN: Your Honor, it's 10:15. We're about to  
3 move to a slightly different part of this.

4 THE COURT: We'll take a recess then.

5 All right. Ladies and gentlemen, please don't discuss  
6 anything about the case and we'll see you in about 15 minutes.  
7 Okay. Thanks very much.

8 THE LAW CLERK: Please rise for the Jury.

9 (The Jury leaves the courtroom.)

10 THE COURT: Dr. Marx, you can step down. We're going  
11 to take a break.

12 THE WITNESS: Thanks.

13 THE COURT: Twenty of or so. Okay?

14 MR. MARTIN: Thank you, your Honor.

15 How much longer do you think you have, Mr. Martin?

16 MR. MARTIN: Forty-five minutes.

17 THE COURT: Okay. I'm just trying to get an idea.

18 (A recess is taken.)

19 (Witness temporarily excused.)

20

21 L E S L I E M A R X, resumes testifies further as follows:

22

23 (Proceedings resume - Jury not present.)

24 THE LAW CLERK: All rise.

25 THE COURT: Are we all set?

1 Do you want to bring out the jury.

2 THE LAW CLERK: Please remain standing for the jury.

3 (Jury present.)

4 THE COURT: Everyone, be seated, please.

5 You can continue, Mr. Martin.

6 DIRECT EXAMINATION CONTINUES

7 BY MR. MARTIN:

8 Q Welcome back. Thank you, Dr. Marx, thank you for coming  
9 back.

10 A Absolutely.

11 Q A couple of questions more on the chart. It got a little  
12 scratched here a bit.

13 This section here, is that called "overcharges"?

14 (The Witness approaches the easel.)

15 A Yes. The overcharges -- the overcharge is the  
16 difference -- the gap between the actual price and the price  
17 that would be predicted in the absence of the conspiracy.  
18 That's the overcharge.

19 Q If there were no effective conspiracy, what would you  
20 expect to see?

21 A If there were no effective conspiracy you would expect to  
22 see the actual price in the predictive -- you would expect to  
23 see the actual price following right along the predictive  
24 price. You would expect to see these right on top of each  
25 other. So the fact that they're different tells you that the

1 prices are higher than they would be predicted to be based on  
2 the competitive process in the benchmark period.

3 Q Okay. Then let's turn to the last part of your steps on  
4 developing the benchmark product models inspecting for  
5 liability.

6 A "Inspect results for liability."

7 And this slide talks about the factors that support  
8 the opinion that this prediction, that this model is reliable.  
9 The first one says, "A methodology grounded in the literature  
10 and the facts of the case."

11 So this, the methodology here, the techniques that are  
12 being used are standard well accepted techniques in the  
13 literature, and the approach is grounded in the facts of the  
14 case.

15 Q What about the next one, "model performs well"?

16 A Number two, the model performs well.

17 And one of the key measures of the model performing  
18 well is that when we use a prediction, when -- we don't tell  
19 what the blue line is and ask it to predict the prices, it fits  
20 well in the benchmark period. So we see our model is capturing  
21 what we want it to, it's capturing the competitive process in  
22 the benchmark period, and there are also a number of standard  
23 statistical tests that you can -- standard diagnostics that you  
24 can calculate and look at.

25 Q How --

1 A I'm going to spare you the details of those statistics, but  
2 there are standard diagnostics that are applied as well, and it  
3 performs well on those measures.

4 Q How important is the fact that the model matches back up in  
5 the post-conspiracy period in determining the reliability of  
6 the model?

7 A I think that's very important. A key measure of the  
8 reliability of the model is looking at its ability to predict  
9 prices in the benchmark period, that it is doing a good job  
10 capturing the competitive process in the benchmark period, that  
11 it matches up before and after. That's important to me in  
12 seeing that this is going to give us a reliable measure of what  
13 prices should have been in the absence of the conspiracy.

14 Q Then "Produces sensible results." What's that mean?

15 A You also want to just look at the results with the  
16 background of what you've seen in the evidence, what you know  
17 about prices, what you know about the evidence in this case and  
18 ask yourself: Does it make sense?

19 And so you're getting reasonable estimates of prices.  
20 It's very similar at the beginning of the conspiracy,  
21 particularly in polyols and MDI, similar at the end of the  
22 conspiracy, it matches up in a period here when there is more  
23 evidence of more conduct that looks like competitive conduct.  
24 So the results match with what you see in the evidence.

25 Q And "Consistent results across the models"; what does that

1 mean?

2 A Remember, these products are linked. TDI, MDI and polyols,  
3 they're produced and purchased by the same firms. The prices  
4 are set by some of the same individuals, the same executives.  
5 So we wouldn't expect wildly different results.

6 It gives me comfort and additional confidence to see  
7 these models producing similar results across the different  
8 products. And remember, there are different variables in the  
9 different models. We're using cost factors for TDI and demand  
10 factors for TDI in this model, and we're using the cost factors  
11 and demand factors for MDI in that model. So the models have  
12 different variables in them but they're giving different  
13 results across the models.

14 Q So before we go to the next point, there is a little bump  
15 right here.

16 A Yeah. I wanted to talk about -- yeah, let me talk about  
17 this.

18 Q Tell us about that.

19 A There's -- you see here, the prediction in the early period  
20 here is that it's predicting that prices would actually be  
21 above what they actually were right here at the beginning of  
22 the conspiracy. And you can probably -- you can see the little  
23 gap there.

24 So remember from looking at polyols and MDI, that in  
25 that early period the predictive price was pretty much the same

1 as the actual price. So this early period is one where  
2 predictive prices and actual prices are basically the same. So  
3 now remember, this is a prediction, so you can end up with a  
4 prediction that might be a little bit above.

5 When they're close to the same, your prediction can be  
6 a little bit above or a little bit below. And we're getting a  
7 prediction slightly above here. And so what I do just to be  
8 conservative, I credit the conspiracy back with these as  
9 negative overcharges. So I'm going to subtract off, in a  
10 sense, give them credit for having priced below what they  
11 otherwise would have been.

12 So anything associated with this period would be  
13 deducted off the overcharges in the end.

14 Q Do you expect as an econometrician to see the predictive  
15 results to match up perfectly?

16 A No, it's a prediction, but this is -- this is impressive.  
17 That after running this prediction all the way through the  
18 conspiracy period, it hits -- I mean, it kind of nails the  
19 actual prices in the benchmark period at the end. So this  
20 is -- I was very pleased with the performance of this model.

21 Q Okay. One of the issues that was raised was statistical  
22 significance.

23 A Yes.

24 Q Are you familiar with statistical significance?

25 A Yes.

1 Q Do you think it's an important measure of reliability of  
2 the model?

3 A No. I don't -- I don't think of statistical significance  
4 as being about the reliability of the model. It tells you  
5 about how precisely your overcharges here are measured. So  
6 it's an important thing to look at, but it's more about the  
7 precision with which you're able to estimate the overcharges.

8 Q Can we talk about statistical significance for a minute?

9 A Yes.

10 Q First of all, what is statistical significance? Let's  
11 figure out what that label is.

12 A Yeah. Statistical significance -- this is a statistical  
13 model, and so there can be statistical error in the model. But  
14 with statistical error we can quantify the error rate. We can  
15 ask the question: Could these results have happened due to  
16 chance? We can ask: With what confidence can we say that  
17 these results -- that there really is a gap here? That there  
18 really was an overcharge? And you can ask that question in a  
19 formal statistical sense.

20 And this slide shows you, for using the standard  
21 statistical techniques for assessing statistical significance,  
22 you can ask the question: Could the 80, the TDI 80/20  
23 overcharge, could that be zero? Could it just be by chance  
24 that we're seeing this actual gap, the overcharge here?

25 And you can say for that model that with 99.4 percent

1 confidence that result is not due to chance. And so there's --  
2 this is a very strong result for the TDI model.

3 For CFS polyols you can ask the same question and you  
4 can show that with 92.8 percent confidence you can say the  
5 result there is not due to chance, that there really was an  
6 overcharge there.

7 And with pMDI, the confidence level is 80.8 percent.

8 Q Now, do you look at those confidence levels in isolation?

9 A No. Remember, the products are linked to one another, we  
10 have the body of evidence in this case, so this is -- this is  
11 one thing. But it's one piece.

12 Q Are there standards, thresholds that statisticians use to  
13 define -- to use the label "statistically significant"?

14 A Yeah, it's common in the economics literature to see  
15 confidence levels of 99 percent, 95 percent, or 90 percent, and  
16 the most common level you would see would be at 95 percent  
17 confidence level. So it would be very common to see the 95  
18 percent called out as a threshold for saying that you have a  
19 statistically significant result.

20 So you can see that TDI, no matter what threshold  
21 you're using, we have a statistically significant result for  
22 TDI.

23 For CFS polyols, it would be viewed as statistically  
24 significant at the 90 percent level, so in one of the commonly  
25 used levels; pMDI is statistically significant only at the 80



1 percent level.

2 Q What's the difference between, like, a 94 percent and a 95  
3 percent and a 96 percent level?

4 A You know, these are -- there's not much difference, but it  
5 is -- 95 percent, for example, or 90 percent, these would be  
6 fairly common thresholds to be a threshold that you would -- if  
7 someone tells you that a result is statistically significant,  
8 probably what they have in mind, that it's met a 90 or 95  
9 percent threshold level. And we have again, TDI, we have no  
10 issue with that;

11 CFC polyols above the 90 percent level;

12 The prediction on the MDI, we have an 80 percent level  
13 for pMDI.

14 Q In the world of statistics, is there something called  
15 "practical significance"?

16 A Yes, there is.

17 Q Could you explain that to the jury?

18 A Yes. There's this idea of practical significance which  
19 just says you want to take it all in context. And for -- given  
20 the analysis that I have done and the evidence that I have seen  
21 of conspiracy, 80 percent is certainly high enough for me to  
22 not have any questions about whether these overcharges are  
23 really there.

24 Q Do these numbers -- I guess the only one we can talk about  
25 is the MDI -- do they cause you to question the reliability of

1 the model?

2 A No. Again, it's not really a statement about the  
3 reliability of the model, it's a statement about the precision  
4 with which you're able to estimate that there were overcharges.

5 Q One last set of questions on this and then we're going to  
6 turn to a slightly different subject.

7 Does this market-wide model account in any way for  
8 negotiating skill or bargaining power?

9 A Yes.

10 Q How?

11 A I think you've heard some discussion about how negotiations  
12 were part of how prices were formed in this industry. And to  
13 the extent that negotiations were part of how the prices get  
14 agreed upon, then to the extent that the negotiations affect  
15 industry-wide price levels, they're in the prices. So those  
16 are going to be captured in this industry-wide price line.

17 Q That doesn't account for specific negotiating power of any  
18 particular buyer, does it?

19 A No, it doesn't.

20 Q Did you deal with that in your -- in another step of your  
21 opinions?

22 A Yes. So I still at this point haven't done anything  
23 specific to the plaintiffs and I haven't done anything to  
24 capture whether there might be some particular negotiating  
25 skill or particular considerations affecting individual

1 transactions, so I need to do that. So there's going to be  
2 another step that I'm going to have to do to take care of that.

3 Q Let's stalk about that third opinion: "Plaintiffs suffered  
4 harm as a result of the alleged conspiracy."

5 Did you estimate plaintiffs' specific overcharges?

6 A Yes.

7 Q How?

8 A I think I have some slides to discuss to help illustrate  
9 that. I'm going to look at all of the transactions, I'm going  
10 to look at all of the transactions for each of the plaintiffs,  
11 so I'm going to dig down into the plaintiffs in this case and  
12 their transactions to look at their prices specifically.

13 Q And before we go to that picture, is the purpose -- well,  
14 what's the purpose of this second step?

15 A It's to take into account in particular how the conspiracy  
16 affected the plaintiffs in this case and to allow me to take  
17 into account any particular factors that might have affected  
18 individual negotiations. I want to be able to take that into  
19 count as well.

20 Q So the next one is going to come from that slide there.  
21 You might want to go back.

22 A So this graph is showing you that blue line. That same  
23 blue line that's over there, but the time period is different.  
24 It's only showing the conspiracy period. So it's just running  
25 from '94 to the end of 2003, and it's zoomed in. So the price

1 is starting at \$.40 instead of at zero like over there.

2 So we've kind of zoomed in on the price line here.

3 Okay?

4 Q So that blue is this blue?

5 A It's the -- yeah, the same blue line. You can kind of  
6 compare it. It's the same line between the two.

7 Q And then what's this?

8 A Good.

9 Each of these green dots represents a transaction  
10 where Leggett & Platt, which is one of the plaintiffs,  
11 purchased Voranate T80, which is one of Dow's TDI products. So  
12 each of these is a purchase by Leggett & Platt of this TDI  
13 product.

14 And you can see each of the dot shows you on the time  
15 dimension when the transaction happened, and the height of it  
16 shows you the price at which the trade, the sale was made.

17 Q What's going on with the line of green that's way up there  
18 at the top?

19 A Good.

20 Yes. Notice that these transaction prices are  
21 following along the industry-wide price line, so they have a  
22 relationship to the industry-wide price line. When the  
23 industry-wide price go down, they go down. And then we have  
24 these -- this cluster of dots up here.

25 I think you've heard some about rebates and discounts.

1 The way the prices were negotiated in this industry, there were  
2 sometimes a price negotiated and then additional rebates or  
3 discounts applied to the price.

4 In the data, for all the cases where I could match a  
5 rebate or a discount to a particular invoice, to a particular  
6 transaction, I just calculated the net price. I just took into  
7 account the rebates to get the actual price. And so these are  
8 showing where the rebates are incorporated, the net price,  
9 taking into account the rebates.

10 But there are some cases where you might have a rebate  
11 at the end of a quarter. So there might have been a number of  
12 transactions over a few months, and then at the end of the  
13 quarter you see a rebate. So I had the data on the rebate, but  
14 I don't have a way to associate that end-of-quarter rebate. I  
15 don't know which of the individual transactions during the  
16 quarter it should be associated with and what in proportions.

17 And so in that case I just waited until the end and  
18 then deducted the overcharges associated with that rebate at  
19 the end. So I'm going to take it into account but I don't have  
20 a good way of adjusting the green dot.

21 So these transactions here, if you look in the data,  
22 there's a rebate in this period, the end of this period of  
23 time, that you apply it to these, it brings them down right to  
24 the basic price level.

25 So whenever I can associate a rebate with a

1 transaction, that's already incorporated. But there are going  
2 to be some cases -- it's not -- it's not a big effect overall  
3 but it can loom large if you zoom in on a particular  
4 transaction.

5 If you focus on this particular transaction, you can  
6 see that the issue that the rebate is not incorporated shows up  
7 there. It's not a big issue overall in the data, but it needs  
8 to be taken into account.

9 Q So this deals with Leggett & Platt's purchases of Voranate  
10 T80. How many of these analyses were done?

11 A Oh, there was an analysis like this done for every product  
12 purchased by every plaintiff. So I'm going to do this for  
13 each -- an analysis like this for each of the transactions,  
14 every purchase by the plaintiffs in this case from the alleged  
15 conspirators.

16 Q Does this picture that you're looking at here tell you  
17 anything about the relationship between the actual prices that  
18 Leggett & Platt paid for Voranate T80, and the market-wide  
19 price that you estimate?

20 A Yeah. You can see from this that the prices that Leggett &  
21 Platt are paying are -- are following pretty closely with  
22 industry-wide prices, although their prices for this particular  
23 product, it looks like they tend to be slightly above the  
24 market-wide price for this product. You can see these green  
25 dots tend to be a little bit above the market-wide price line

1 most of the time.

2 Q What's the next step?

3 A We still haven't done anything to ask whether these prices  
4 were above what they would otherwise have been, so we need to  
5 add the layer of putting our predictive price line in there.

6 So again, these are the red dots, they're the same red  
7 dots from over there. So they're our estimate of what the  
8 market-wide price would have been in the absence of a  
9 conspiracy.

10 And now what we're going to do is we're going to look  
11 at the relationship of Leggett & Platt's prices to the  
12 industry-wide price line and we're going to model each of those  
13 transactions as being related to the overall level of price,  
14 the extent to which it's benchmarked off the industry-wide  
15 price, and we'll allow a transaction-specific effect for each  
16 transaction to capture the particular differences that are  
17 associated with that transaction.

18 In order to estimate a but-for price, what the price  
19 should have been for each of these transactions, what we'll do  
20 is assume that instead of these transactions being benchmarked  
21 off the industry-wide price, assume that they're benchmarked  
22 off the but-for price, off the red line. And that gives us --  
23 the little purple diamonds give us for each of the transactions  
24 what the price would have been if that transaction, instead of  
25 being benchmarked off the industry-wide price was, instead,

1 benchmarked off the predictive price, the but-for price.

2           And we're going to keep in place any of these  
3 particular factors. If one transaction, it had high volume and  
4 so there was a particular low price for that transaction, or  
5 there's particularly high negotiating skill applied to one  
6 transaction, we're going to keep that -- that special effect  
7 for each transaction, we're going to assume that that would  
8 still have been in place in the but-for world.

9           So if they were getting an extra discount in the  
10 actual prices, we'll assume they still would have gotten those  
11 extra discounts in the but-for world, but that the price would  
12 have been benchmarked off a different industry-wide price.

13 Q   So does this take into account Leggett & Platt's specific  
14 negotiating power, bargaining skill, specific factors for that  
15 particular plaintiff?

16 A   Yes.

17 Q   Is this use of a two-step approach unusual?

18 A   No, this kind of approach of dealing with things in  
19 two-step, it's been used before in cases like this, it's a well  
20 accepted approach to this.

21 Q   Do you think it makes sense in this case?

22 A   Yeah. You know, and I think it's a particularly good fit  
23 in this case because we know in urethane's you tend to see  
24 market-wide price announcements, so a benchmarking against a  
25 market-wide price followed by individual negotiations. So this



1 two-step of thinking in terms of market-wide prices and effects  
2 there, and then the negotiation, the transaction-specific  
3 effects is a particularly nice match for the facts in this  
4 case.

5 Q Okay. So I think we're now onto your fourth opinion, which  
6 is, what do you do next?

7 A Plaintiffs suffered over \$608 million, or paid more than  
8 \$608 million more than they would have paid.

9 So what I'm going to do is, for each of these  
10 transactions, for each of the green dots, I'm going to look at  
11 the difference between what they did pay and what they would  
12 have paid in the absence of the conspiracy and multiply by the  
13 quantity, by how much volume was in that transaction, and I'm  
14 going to add those up across all of the transactions. And the  
15 computer is going to add them up. I mean, I didn't do it with a  
16 calculator, but you can automate there. So I can add up all of  
17 the overcharges for all of the individual transactions. And  
18 when you add them up and adding up across all the plaintiffs,  
19 you get to the 608 million.

20 Q So were you given some instructions about who the  
21 plaintiffs are?

22 A Yes, I was, from the -- the counsel, the lawyers gave me  
23 instructions about which -- who -- which entities, which firms  
24 were the plaintiffs at issue in this particular case, so they  
25 told me which ones to consider.

1 Q I'm now going to ask you to read out those names.

2 A Oh my. I'm just going sit down here.

3 Q I would recommend that.

4 A The British Vita plaintiffs --

5 Q Who are they?

6 A They are British Vita, Unlimited; Vitafoam Incorporated;  
7 Vitafoam Products Canada Limited; Vita Industrial, Inc.;  
8 Pathway Polymers Inc.; Crest Foam Industries, Inc.; Crest Foam  
9 Corp., Synair Corp.; and Hyperlast North America.

10 Carpenter plaintiffs. I'm really sorry, but it seems  
11 to be important that they be read into the record so I'm just  
12 going to read these: Carpenter Company; E.R. Carpenter  
13 Company, Inc.; E.R. Carpenter LP; E.R. Carpenter Expert  
14 Company, Inc.; Carpenter Canada Ltd.; Carpenter Chemical Co.

15 The Flexible Foam plaintiffs are: Flexible Foam  
16 Products; Flexible Foam Company; Flexible Foam Inc.; High  
17 Standard Pad, Inc.; Nu-Foam Products, Inc.; Ohio Decorative  
18 Products, Inc., Burkart Foam Inc.; Universal Urethanes, Inc.;  
19 foam supplies plaintiffs: Foam Supplies, Inc.; Archway  
20 Sales, Inc.; National Polyurethane Inc.

21 Hickory Springs plaintiffs: Hickory Springs  
22 Manufacturing Company; Hickory Springs of California, Inc.;  
23 Carpet Cushion Company, Inc.; Eastern Foam, Inc.

24 Huber plaintiffs: Huber Engineered Woods LLC; J.M.  
25 Huber Corporation; J.M. Huber Co.

1 Oh my.

2 Q Sorry.

3 A Leggett & Platt plaintiffs: Leggett & Platt Incorporated;  
4 Leggett Partners, L.P.; Leggett & Platt Components Co., Inc.;  
5 L & P Financial Services Company; Leaving Taos, Inc.;  
6 Crest-Foam Corp.; Crest-Hood Foam Company, Inc.; Crest-Foam  
7 Corp.; GFC Dura Bond LLC; Met Displays, Inc.; N-Sag Foam  
8 Products Company, Inc.; No-Sag Products; Southwest Carpet Pad,  
9 Inc.; Iredell Fiber, Inc.; Fairmont Corp.; Hi-Life Products,  
10 Inc.; PMC Inc.; MPI Inc., Texas Fibers, Inc.

11 Lubrizol plaintiffs: Lubrizol Advanced Materials,  
12 Inc.; Lubrizol Corporation; Noveon, Inc.; PMD Group Inc.; BF  
13 Goodrich Company; BP Performance Materials.

14 Dash-MarChem plaintiffs: MarChem Corporation; MarChem  
15 Southeast; MarChem Pacific; MarChem Inc.; Dash Multi-Corp.  
16 Inc.; Archway Sales Company; Archway Sales, Inc.

17 The Skypark plaintiffs:

18 Skypark Manufacturing, LLP; Burtin Urethane  
19 Corporation; Burtin Polyurethane LLC.

20 Woodbridge plaintiffs: Woodbridge Foam Corporation;  
21 Woodbridge Holdings, Inc.; Wood Services; Woodbridge Corp;  
22 Woodbridge Services Inc; Woodbridge Foam Fabricating;  
23 Woodbridge Sales & Engineering; Woodbridge Inoac Inc. Michigan;  
24 Johnson Controls, Inc.; Dynaflex Plastics; SW Foam LP; Cartex  
25 Corporation.

1 Q I was going to give you a second to breathe.

2 A Whew.

3 Q All right. Now that we've read those into the record:

4 Plaintiffs' damages.

5 This is a chart of the plaintiffs' damages from Dr.  
6 Raiff's most recent report. Could you just walk the jury  
7 through what this is and how to read it?

8 A Yeah. This table is showing for the first set of  
9 plaintiffs, for each of the plaintiffs, it shows you the  
10 different products, TDI, MDI and polyols, and shows their  
11 purchases, and then overcharges.

12 So if we start at the top here, for British Vita, they  
13 had 230 million plus dollars of purchases in TDI, pre-1994 to  
14 2003, from the alleged conspirators, and the overcharges  
15 associated with those transactions are \$28.5 million. And if  
16 you take the overcharges and divide by the net purchases you  
17 can calculate what the percent is.

18 And this is done for each of the plaintiffs. There's  
19 another page that has the rest of them.

20 This finishes off the list of the different plaintiff  
21 groups. And then at the bottom it has the total. So it shows  
22 the total transactions, 5,431,000 -- sorry -- transactions,  
23 it's \$5,431,281,860. And this overcharge number, this is --  
24 this is Dr. Raiff's overcharge number, this 616, and we need to  
25 make an adjustment. So let -- I'm going to draw on this screen

1 here.

2 Shall I talk about the adjustment?

3 Q Actually I'm going to hand you -- you can draw on the  
4 screen; I'm also going to hand you a hard copy of what you just  
5 looked at and described.

6 A Okay.

7 Q But tell us about Carpenter polyols.

8 A Yes. So Carpenter, we have Carpenter polyols here, and  
9 then we have \$226 million in purchases and 11 million in  
10 overcharges here.

11 When Dr. Raiff was doing this calculation, the  
12 understanding was that these were the appropriate set of  
13 products to be looking at. It came to my attention recently  
14 that included in the products that Carpenter purchased from  
15 Lyondell were three products that were not polyols, that were  
16 propylene oxide, which is a related product. It's also made  
17 from propylene, it has a similar name, it has similar prices,  
18 so it was in there in the data but it doesn't belong there. So  
19 we need to take it out.

20 So I would like to -- this -- this number here is too  
21 high. And so, in my opinion, the correct overcharges is \$8.2  
22 million lower than this.

23 Q Could I just ask you to change that? And here's a pen.  
24 Just change that on the hard copy.

25 (Witness complies.)

1 A So I'm going to -- that number for polyols needs to be  
2 adjusted, and also the total for Carpenter.

3 I've done it on the paper.

4 Q What about the final total?

5 A Can you flip to the next slide.

6 Great. Oh. I guess I need to -- here we go.

7 So, and then it affects of course this number down  
8 here at the bottom. So this number should instead be eight --  
9 oops -- 608.5 million.

10 Q Let me ask you -- and you've written that on the hard copy  
11 as well.

12 A Let me get it on the hard copy.

13 Okay. I've got that written down.

14 MR. MARTIN: Your Honor, we would move the admission  
15 of this document as PX-1417.

16 MR. BERNICK: I would object to that, your Honor, for  
17 the reasons previously --

18 THE COURT: What was that?

19 MR. BERNICK: I'm sorry. I'm sitting down with all  
20 these papers in my lap.

21 THE COURT: Don't lose your papers.

22 MR. BERNICK: I'm going to object to that for the  
23 reasons previously stated with the papers we filed with the  
24 Court.

25 THE COURT: Your objection is noted. Go ahead.

1 BY MR. MARTIN:

2 Q We're almost done. I just want to ask you a few questions  
3 about the chart itself.

4 I think I can do it with my little thing here, but you  
5 might want to go there.

6 If we look at Woodbridge, for example, this number  
7 here, 7.3 percent for polyols; and then we look at MarChem, 8.3  
8 for polyols; and Leggett & Platt, 13.2 percent for polyols, why  
9 are they different?

10 A Yeah. Remember, these -- the different plaintiffs are  
11 purchasing different amounts of product from different of the  
12 alleged conspirators, they're purchasing products at different  
13 periods of time. So remember, there are periods of time when  
14 the overcharges are zero or small, and there are periods of  
15 time when the overcharges are larger. So it matters when the  
16 bulk of their purchases were happening. And for some of the  
17 plaintiffs, their price was not affected very much by movement  
18 in the industry-wide price line; perhaps due to negotiating  
19 skill or something else, and in that case there's not much of  
20 an overcharge assigned to it.

21 Q When we talk about the plaintiff up here, is that the  
22 plaintiff that we just read the long list?

23 A Yes. So, each of the plaintiffs' names in this table  
24 corresponds to one of those pages of all of those names.

25 Q And then net purchases, does that include -- well, what is

1 net purchases?

2 A That's the purchases taking into account the rebates.

3 Q Okay.

4 A And the overcharges also. In these numbers, I've taken off  
5 any overcharges associated with those rebates, so that  
6 adjustment has been made in these numbers.

7 Q And then you talked a little bit about this negative  
8 overcharge. Is that factored in here somewhere?

9 A Yes. So whenever there were purchases -- whenever an  
10 individual plaintiff had a period with negative overcharges,  
11 those are deducted off the overcharges, so I in a sense give  
12 them credit for those negative overcharges.

13 Q And my last question: My math is -- I usually take this  
14 and I multiply it times that and I get that. Is that how you  
15 came up that those numbers?

16 A No. The way this was calculated was, the overcharges were  
17 calculated using -- adding up the overcharges for each  
18 individual transaction. Those were added up, and then if you  
19 want to know the percentage, you can take that total and divide  
20 by the purchases.

21 But it's not like I calculated a percentage and then  
22 just multiplied by the total purchases. I calculated the  
23 overcharges on a transaction-by-transaction basis and added  
24 them up. And in case it's useful to have as a reference, you  
25 can calculate the percentage. So that's in the table as well.



1 Q Okay.

2 MR. MARTIN: Your Honor, I pass the witness.

3 THE COURT: All right. Thank you.

4 Mr. Bernick.

5 MR. BERNICK: I'm going to need a few minutes to set  
6 up, if I can have that, your Honor.

7 THE COURT: Just a few minutes.

8 Ladies and gentlemen, just retire to the jury room for  
9 five minutes, and as soon as Mr. Bernick is set up we'll get  
10 going.

11 THE LAW CLERK: Please rise for the Jury.

12 (The Jury leaves the courtroom.)

13 THE COURT: Dr. Marx, you can step down for a couple  
14 of minutes.

15 THE WITNESS: Thank you.

16 (Witness temporarily excused.)

17 (A recess is taken.)

18 (Proceedings resume - Jury not present.)

19 THE COURT: All right. The jury is all set, so let's  
20 bring them out.

21 Dr. Marx, thanks.

22 MR. MARTIN: Your Honor, I may move around just so I  
23 can see. Is that okay?

24 THE COURT: Yes.

25

1 L E S L I E M A R X, resumes, testified further as follows:

2

3 THE LAW CLERK: Please rise for the Jury.

4 (Jury present.)

5 THE COURT: Okay. Be seated, everyone.

6 Mr. Bernick, proceed with cross-examination, please.

7 MR. BERNICK: Yes.

8 CROSS-EXAMINATION

9 BY MR. BERNICK:

10 Q Good morning, Dr. Marx.

11 A Good morning, Mr. Bernick.

12 MR. BERNICK: Good morning, ladies and gentlemen.

13 Q I think you mentioned on direct examination that you worked  
14 for an economics consulting firm. Is that right?

15 A Yes, sir.

16 Q And the name of that firm is the Bates White firm?

17 A Bates White economic consulting I think is the name. And  
18 it's not the same Bates, as the Bates numbers that show up on  
19 these documents, it's a different Bates.

20 Q Right, that would make it legal. This is economics.  
21 Right?

22 So, and you took over from Dr. Raiff due to  
23 circumstances that had nothing to do with this case in about  
24 2013. Right?

25 A Yes.

1 Q And since then I think Dr. Raiff had been working on the  
2 case for roughly how many years?

3 A I think his initial reports were 2011. So multiple years  
4 at that point I think.

5 Q And it's true, is it not, that Mr. Raiff made some errors  
6 in his work that affected the content of his reports. Correct?

7 A Not the revised reports. I think there were mistakes that  
8 were identified and corrected.

9 Q Well, that's what I'm asking about.

10 A Oh.

11 Q He wrote a report. Before there was a revised report there  
12 was an initial report. Correct?

13 A Yes.

14 Q There was an expert report. Right?

15 A It probably said that on the title, yeah.

16 Q Okay. And you have all his reports around there someplace,  
17 don't you?

18 A There's a pile here, yes.

19 Q Okay. And is it true that Mr. Raiff in his first reports  
20 did not do any analysis or tests for statistical significance?

21 A Are you asking -- I'm sorry. Are you asking me about the  
22 reports, the unrevised reports? Because I didn't look at them.

23 Q Okay. So you've never looked at Dr. Raiff's first expert  
24 report?

25 A The one before he -- okay. There was -- Dr. Raiff had an

1 initial report and then a mistake was identified and then he  
2 produced a revised report. I didn't feel the need to look at  
3 the one that was wrong.

4 Q That answers my question. So you never read his first  
5 expert report?

6 A Again, I read -- there was the initial report, and then the  
7 reports by Dow's experts, and the reply report. I read the  
8 initial report, the corrected one, and the reply report, the  
9 corrected one, but not the ones -- not the first version.

10 Q The original version?

11 A Yes.

12 Q Okay. And so he made -- he didn't do a statistical  
13 analysis in that -- I mean, a statistical analysis for  
14 statistical significance in that report, did he?

15 A That's right, he didn't.

16 Q And then when he issued his revised report, isn't it true  
17 that he -- he did an analysis or a test for statistical  
18 significance?

19 A I think you're talking about the reply report.

20 Q Yes.

21 A Right. Okay. So there was the initial report, and then  
22 Dow's experts raised the issue that they thought there should  
23 be some look at statistical significance. And so then in Dr.  
24 Raiff's response he did that.

25 Q Right. So his first report didn't look -- didn't test for

1 statistical significance?

2 A That's right.

3 Q Dow's experts raised the issue. He then did another report  
4 that did look for statistical significance?

5 A Yes.

6 Q And it actually turns out that that report also contained  
7 an error. Correct?

8 A That's my understanding. I didn't look at the one where  
9 they said there was a mistake.

10 Q But he made a mistake in the calculation. And that, too,  
11 was pointed out by actually Dow's counsel in the case. Right?

12 A That's my understanding, yes.

13 Q And so then he had to issue yet another revised report.  
14 Right?

15 A Yes.

16 Q So it would be fair to say that Dr. Raiff -- I mean,  
17 statistical significance is a significant part of the work you  
18 looked at in this case. Correct?

19 A It's a part of it.

20 Q Well, is it a significant part of it?

21 A I just think of it as one piece of everything I looked at.

22 Q Well, I guess I'm just asking you: Is it significant or  
23 not?

24 MR. MARTIN: Asked answered.

25 THE COURT: I think she's answered it.

1 MR. BERNICK: Okay.

2 Q So, for whatever significance it had, you have talked to  
3 the jury about it for some length here this morning. Correct?

4 A Yes, I talked about it here, yes.

5 Q And so Mr. Raiff didn't simply make a clerical error, he  
6 never did the analysis to begin with, and when he did it, he  
7 did it wrong. Correct?

8 A He didn't do it in his initial report. It was pointed out  
9 as a criticism and so then he did it. And my understanding is  
10 the first time he did it, it was not done correctly, so then he  
11 did it correctly.

12 Q Yet, we read his report, in fact, because of that error.  
13 Correct?

14 A I only looked at the revised report.

15 Q Now we see today -- you've been involved in this case  
16 for -- I guess it's 2013 -- so you've been involved in the case  
17 for about three years. Correct?

18 A That's right.

19 Q And isn't it true that since you've been involved in the  
20 case, you've taken a look at Mr. Raiff's, Dr. Raiff's work.  
21 Correct?

22 A Oh, yes.

23 Q And you -- actually your role in the case, when you became  
24 involved, when you substituted in for Dr. Raiff, your role was  
25 spelled out by a court order. Correct?

1 A That's right.

2 Q And what that order said was that when you became -- if you  
3 decided to become involved as the -- as Dr. Raiff's successor,  
4 that you could only do so if you were prepared to endorse and  
5 approve Dr. Raiff's work. Correct?

6 A I don't remember exactly what the language was, but it was  
7 something to that effect; to step into his shoes, yes.

8 Q Right.

9 MR. MARTIN: I object, that's not the actual language  
10 of the Order.

11 THE COURT: Right. Well, the objection is sustained.  
12 But to who -- you have the Order. Correct?

13 MR. BERNICK: Yes, I do.

14 THE COURT: Why don't you show the witness.

15 MR. BERNICK: I could have --

16 THE COURT: Show the witness the Order.

17 MR. BERNICK: Oh, it's a -- I'm happy to do that, your  
18 Honor.

19 BY MR. BERNICK:

20 Q If you would just read, Dr. Marx, I think I've highlighted  
21 the relevant language (handing document).

22 A (Reading) Accordingly, the Court grant's Plaintiffs'  
23 request and orders that Dr. Marx, the new expert, will not be  
24 permitted to develop her own models or methodologies, but must  
25 endorse and defend Dr. Raiff's opinions.

1 Q So you had a choice; you did work, a significant amount of  
2 work, and then you decided that you were prepared to -- what  
3 were the words -- endorse and defend?

4 A Yes, sir.

5 Q -- endorse and defend Dr. Raiff's work. Correct?

6 A Yes.

7 Q Okay. And you did work and, in fact, since that time,  
8 you've testified on two different occasions. Correct?

9 A I'm sorry. Since when?

10 Q Since the time that you became involved in the case, you've  
11 testified under oath on two different occasions?

12 A Are you talking about the deposition and the Daubert  
13 hearing?

14 Q Yes, I am.

15 A Sorry. Yes, twice.

16 Q Okay. So you testified at your deposition and you  
17 testified all about the numbers and all about your model.  
18 Correct?

19 A That's right.

20 Q It was a long deposition as I recall, wasn't it?

21 A It was quite long.

22 Q And it was probably my responsibility.

23 And then you testified again about, I think it was  
24 about a month ago before the Court, again under oath, regarding  
25 your work. Correct?



1 A That's right.

2 Q And yet, here this morning, I guess it must be five years  
3 or so after Bates White became involved, you found still  
4 further errors. Correct?

5 A Are you're talking about the propylene oxide? Yes.

6 Q Yes.

7 In fact, the charts that you showed, you actually  
8 corrected on the stand after five years of Bates White work.  
9 Correct?

10 A I made the correction, yes.

11 Q And isn't it true, Dr. Marx, that Bates White is the firm,  
12 it's kind of the common denominator between Dr. Raiff and  
13 yourself? You were both involved with the same firm. Correct?

14 A He's also a co-author of mine, but, yes, we were both  
15 working at Bates White.

16 Q Now, based upon what you now have done and made the  
17 correction, do you now think that those numbers and your  
18 testimony that you gave to the jury this morning is complete  
19 and accurate?

20 A Yes, I do.

21 Q Okay. I want to talk a little bit about conspiracy and the  
22 conspiracy claim in this case.

23 In opening, plaintiffs' counsel -- I apologize to the  
24 jury and the witness for having my back to them.

25 THE COURT: That's okay, they understand.

1 MR. BERNICK: Okay.

2 Q So that Dow conspired with other suppliers to raise prices  
3 above what they would have been.

4 Is that your understanding of the claim that's being  
5 made in this case?

6 A Yes.

7 Q Now, as I understand it, Dr. Raiff was instructed to assume  
8 that there was a conspiracy. Right?

9 A Yes.

10 Q Is it also true that Dr. Raiff did not do any analysis to  
11 reach an opinion that there was a conspiracy?

12 A That's correct. He reached an opinion that it was  
13 reasonable to go forward with the assumption of a conspiracy.

14 Q Just focus on my questions, please --

15 THE COURT: I think she did. She did. Her answer was  
16 there.

17 Q Let me just ask it very, very simply: Isn't it true that  
18 Dr. Raiff offered no opinion that there was a conspiracy?  
19 Correct?

20 A It's correct that he did not offer any expert opinion that  
21 there was a conspiracy.

22 Q Thank you.

23 And isn't it true that Dr. Raiff, again consistent  
24 with the engagement that you had to become involved in the  
25 case -- isn't it true that you have offered no opinion that

1       there was a conspiracy?

2               MR. MARTIN: I'm going to object to the phrase  
3       "opinion." I think that has a dual meaning in the terms of  
4       art, that is --

5               THE COURT: Overruled. If she can answer it.  
6               Go ahead.

7               MR. MARTIN: Okay.

8       A     I'm not offering an expert opinion that there was a  
9       conspiracy.

10      Q     So no opinion that there was a conspiracy.

11              Now, I thought that that's what you had said, and  
12      therefore I was a little surprised at the language of the  
13      slides.

14              MR. BERNICK: And do you have over there their slides  
15      Number 5 and -- show 5 first.

16      Q     Now, this was your assignment. Correct?

17      A     That was Dr. Raiff's assignment, yes.

18      Q     And that was your assignment too. Because you're stepping  
19      into his shoes.

20      A     Yes.

21      Q     Now, I read these to ask for basically two different  
22      things: One is to determine whether plaintiffs were  
23      overcharged as a result of a conspiracy to elevate prices of  
24      TDI, MDI and polyether polyols. Do you see that?

25      A     I see that.

1 Q And that basically is a question about whether there was  
2 impact of the conspiracy that you were asked to assume took  
3 place?

4 A Yes.

5 Q So that's the impact question.

6 And the second question is damages. Right?

7 A Yes.

8 Q So we have the conspiracy is assumed, you had to make that  
9 assumption when you stepped into Dr. Raiff's shoes; you were  
10 then asked to determine, as he did, whether there was an impact  
11 or an overcharge, and whether -- what the damages were.  
12 Correct?

13 A Yes.

14 Q Okay. Now, on the slide that you showed for your  
15 conclusions --

16 MR. BERNICK: If you could show 2.

17 Q -- I see in the third and fourth conclusions --

18 MR. BERNICK: If you could highlight those for a  
19 second.

20 Q -- the third conclusion relates to your assignment to look  
21 for the impact. Right?

22 A That's right.

23 Q And the fourth relates to your assignment to look for and  
24 calculate damages. Correct?

25 A Yes.

1 Q But the second point doesn't relate to either one of those  
2 assignments, did it?

3 A What I was meaning in that second point was that there was  
4 an effective conspiracy. So under the assumption that there  
5 was a conspiracy, the analysis that I did and evidence I saw  
6 supports the conclusion that the assumed conspiracy was  
7 effective.

8 Q But again, that is -- that second conclusion actually says:  
9 "There was an effective conspiracy," even though you told us in  
10 your deposition under oath that you had no opinion that there  
11 was a conspiracy. Correct?

12 A What I mean is that the analysis I did and the evidence I  
13 saw supports the conclusion that the conspiracy that I assumed  
14 to have been in place was effective.

15 Q That's not what that says. It says that there was a  
16 conspiracy. Correct?

17 Let me just ask you flat out: Did you draft that  
18 conclusion?

19 A I did.

20 Q Would you now say, recognizing the way that it reads, that  
21 it is at least a little unclear and maybe a little bit wrong?

22 A I don't mean to be offering to the jury an expert report  
23 that there was a conspiracy.

24 Q Thank you.

25 Now, beyond the question of whether a claim of

1 conspiracy, I believe you've also told us this morning  
2 something more specific.

3 MR. BERNICK: If I could have a hand here.

4 (The easel is repositioned.)

5 Q You also testified this morning, we have the general  
6 claim --

7 MR. BERNICK: Just leave it in front there, if you  
8 could. Thank you.

9 Q But we have something else, we have a very specific  
10 contention in this case. Right? I mean, that's a general  
11 statement of law about this case. But I think you recited a  
12 very specific contention.

13 And if I've got this correct, it was this: And we  
14 actually have a handy dandy little --

15 MR. BERNICK: I don't think -- do you have this up?

16 Okay. If you could pull it up, it's a rough  
17 transcript of what you just said a few minutes ago.

18 Modern technology.

19 I'll blow that up.

20 Q I think you said that the specific contention in this case,  
21 it says: (Reading) After doing all this work, what was the  
22 understanding that you gained of the behavior of the  
23 conspiracy?

24 So you said: My understanding is that it was an  
25 agreement --

1 MR. MARTIN: I pause. I'll interject. I can't read  
2 that from here. Do you have a hard copy? My eyes aren't good  
3 enough.

4 Q (Reading) That there was an agreement to suppress  
5 competition, effort -- this is a rough transcript -- to achieve  
6 consensus about price increases -- price increase and efforts  
7 to make those price increases effective.

8 Does that pretty much capture what you said?

9 A I think it's what I said.

10 Q Okay.

11 MR. MARTIN: Your Honor, I have an objection I think  
12 I'd like to raise it at sidebar.

13 THE COURT: All right. I'll see you at sidebar.

14 (At the sidebar.)

15 MR. MARTIN: That language that he's referring to and  
16 that she based her opinion on comes from information provided  
17 by Bayer. I want to make sure that he's aware of that. She's  
18 not allowed to talk about the Proger proffer, but it is part of  
19 the basis of her opinions.

20 I want to give you warning that if you start talking  
21 about it, it could open the door.

22 THE COURT: That's part of what she reviewed?

23 MR. MARTIN: Yes.

24 THE COURT: The Bayer discussions is part of it?

25 At this point I don't know what the objection is to

1       this.  He's just --

2               MR. MARTIN:  I just want to make sure that he's going  
3       to walk the line --

4               THE COURT:  He hasn't gotten there yet.

5               MR. BERNICK:  I had no idea.  When he -- he elicited  
6       this from her.  So to the extent that the witness is now  
7       talking about it, it was at his request.

8               THE COURT:  Okay.  I think you're making your point.  
9       She said was; and you're saying there was --

10              MR. BERNICK:  This is a different point now.

11              THE COURT:  Then go ahead.

12              MR. BERNICK:  Thank you.

13              THE COURT:  There's no objection at this point that  
14       I'll sustain.

15              MR. MARTIN:  That's fine.  I just want to make sure  
16       it's clear.  I didn't want to do it in front of the jury.

17              (In open court.)

18              THE COURT:  All right.  The objection is overruled at  
19       this point.

20       BY MR. BERNICK:

21       Q     Now, Dr. Marx, this particular contention, do you see that  
22       there is the effort to achieve consensus about price increase  
23       announcements --

24       A     It doesn't say "announcements."

25       Q     Oh, price increases.  Okay, fair enough.



1 A There probably should be an "s" on price increase.

2 I know the reporter is trying real hard, but it should  
3 be: "...to achieve consensus about price increases," with an  
4 "s."

5 Q Okay.

6 "Price increases." Anything else?

7 A No, I think that's all.

8 Q And "efforts to make those price increases effective."

9 So there's two elements of this specific contention.  
10 Right?

11 A Do you want to include "suppress competition" as part of  
12 the elements? I'm not sure how you're trying to break this  
13 down.

14 Q Suppress competition is what the basic claim is. Right?

15 A Yes.

16 Q So the specific facts that are referenced here are  
17 consensus about the price increases. The jury has heard a lot  
18 about price increases; and to make those price increases  
19 effective. Those are two elements of the contention. Right?

20 A Yes.

21 Q Okay. Let me see if we can agree on a couple of things as  
22 a matter of fact in this case.

23 Isn't it true that the price increase announcements in  
24 this industry are not the same as actual prices charged? Do  
25 you agree with that?

1 A I agree.

2 Q Would you also agree that price increase announcements more  
3 or less reflect industry-wide factors? True?

4 A I don't agree that they include industry-wide cost and  
5 demand factors, particularly during the conspiracy period.

6 Q Yes.

7 Let me show you --

8 MR. BERNICK: If we could -- if we could pull up page  
9 359 of the deposition.

10 Blow that up.

11 Q Did I ask you this question and did you give this answer at  
12 your deposition:

13 (Reading) That is, the price increase announcements,  
14 you would agree, tend to be driven by industry-wide factors  
15 because the same announcement is made to everybody. Right?

16 And your answer was, "Yes."

17 Was that your testimony?

18 A Yeah, in a competitive -- in a competitive environment,  
19 yes.

20 Q But you didn't say that, you just said, industry-wide  
21 factors because the same announcement is made to everybody.  
22 Correct?

23 A This is part of a very long deposition and part of a long  
24 line of questioning. What I meant there was, in a competitive  
25 environment you would expect those price increase announcements

1 to tend to be driven by that underlying cost and demand  
2 factors.

3 Q So that's what you meant by what you said here?

4 A Yes.

5 Q So they would be industry-wide factors. Right?

6 A What I understand that to mean is things like the  
7 underlying cost and demand factors.

8 Q Right.

9 A Yes.

10 Q Is it also true that with respect to the price increase  
11 announcements; the price increase announcements, I'll just say,  
12 price, PIA, were not a variable in your model or Dr. Raiff's  
13 model?

14 A If you're thinking about the list of variables that are  
15 included in the model, no, it's not one of those variables.

16 Q Well, those are the list of variables in the model. So my  
17 question to you is very simple: Isn't it true that price  
18 increase announcements were not a variable in the model?

19 A That's correct.

20 Q Okay. Isn't it also true that you have done no -- you have  
21 done no quantitative assessment of the relationship between the  
22 price increase announcements and their effect?

23 A Only to the extent that the price increase announcements  
24 are incorporated in the actual prices, because I focused on the  
25 actual prices.

1 Q But you never did -- you have no quantitative analysis that  
2 draws a relationship between the price increase announcements  
3 and their effects. Correct?

4 MR. MARTIN: Asked and answered.

5 A You know, you keep pointing to the things you've circled in  
6 red.

7 I didn't say "price increase announcements." I wasn't  
8 talking about the price increase announcements.

9 Q But let me ask you about that. If the price increases  
10 refer to the actual price increases there would be no point in  
11 saying that the issue is whether the price increases are  
12 effective.

13 A My understanding of the conspiracy is that it involved  
14 efforts to achieve consensus about price increases and then  
15 efforts to make that -- those agreements about increasing  
16 prices effective.

17 Q So let's be clear: It's your understanding of this case  
18 that the agreement was not with respect to the announcements  
19 but with respect to the actual prices?

20 A No. It's that there was an agreement to -- there were  
21 attempts to achieve consensus about increasing prices and  
22 undertaking efforts to make those price increases effective.

23 Q The price increases were all announced in price increase  
24 announcements, were they not?

25 A No, not necessarily.

1 Q Well, are you -- are you aware of -- I mean, wasn't it a  
2 standard practice in this industry -- the jury has heard about  
3 it for quite a while -- of sending out letters that made price  
4 increase announcements?

5 A Yes.

6 Q Okay. Now, are you aware of any other mechanism by which  
7 the suppliers actually proposed raised prices to the customers  
8 other than the price increase announcements?

9 A Yes. I saw evidence of agreement to restrict capacity, of  
10 prices before tonnage strategies, evidence of communications of  
11 meetings, of phone calls. I saw lots of evidence that speaks  
12 to reaching consensus about price increases and efforts to make  
13 those price increases effective.

14 Q I want to be very clear about this. We have price increase  
15 announcements. Just the announcements in the letter, okay?  
16 Price increase letters. And then it's correct, is it not, that  
17 these price increase announcements by letter initiated a  
18 negotiation process?

19 A That's my understanding, yes.

20 Q And the negotiation process led to actual prices charged to  
21 customers. Correct?

22 A Yes.

23 Q Now, as you understood the contention about agreement in  
24 the case, is the contention that you understood when you did  
25 all your work the contention that there was an effort or an

1 agreement to achieve consensus about the price increase  
2 announcements, or not?

3 A One -- my understanding is that one component of trying to  
4 achieve consensus about price increases and making those  
5 effective was to coordinate price increase announcements.

6 Q Coordinated price -- so you're saying that there was an  
7 agreement to coordinate price increase announcements. Right?

8 A I'm saying that it's my understanding that that was part of  
9 the efforts to make price increases effective.

10 Q So is the consensus here about price increase  
11 announcements, or not?

12 A It was about price increases.

13 Q But did that include price increase announcements or not?

14 A I think of those as some of the things they did in their  
15 effort to make the price increases effective.

16 Q I'll just focus on the price increase announcements. Okay?  
17 That is, that you think that the conspiracy or the agreement  
18 that you were assuming was to achieve consensus about the price  
19 increase announcements. Is that true or not?

20 A No. You just wrote a word in what I said.

21 Q Sure.

22 A I didn't say that.

23 THE COURT: She answered that question.

24 MR. BERNICK: What?

25 THE COURT: She did answer the question.

1 MR. BERNICK: Well, I'm asking --

2 THE COURT: She's answered it again.

3 So ahead and answer it again if you'd like, Doctor.

4 Go ahead.

5 MR. BERNICK: Go ahead.

6 Q My question very simply is whether you proceeded with the  
7 understanding that there was an agreement as to price increase  
8 announcements or not?

9 A My understanding is that the conspiracy involved achieving  
10 consensus about price increases, and then efforts to make those  
11 price increases effective. And included in those efforts to  
12 make the price increases effective were coordinated price  
13 increase announcements, I saw evidence related to agreements to  
14 restrict capacity, agreements related to price before tonnage  
15 strategies, evidence of communications, meetings, you know,  
16 phone calls. It's in the set of things that I view as being  
17 part of the efforts to make the price increases effective.

18 Q So I'm going to just focus on what you just said:  
19 Coordination of the price increase announcements. Okay?

20 A Okay.

21 Q Isn't it a fact that you have done no quantitative analysis  
22 of the relationship between the announcements that were made  
23 that were in the letters and the actual customer prices?

24 A I didn't try to connect any individual price increase  
25 announcement with any particular movement in the actual prices.

1 Q I'll make it broader. Isn't it true that if we go to your  
2 report and we go to your model, we will not find the  
3 quantification of any relationship between the price increase  
4 announcements generally and actual prices?

5 A Well, to the extent that generally they were affecting  
6 prices, I looked at the actual prices. So generally it's in  
7 there, because the point of the price increase announcements is  
8 to try to have an effect on prices, and I looked at the actual  
9 prices.

10 Q Relationship, Dr. Marx: Price increase announcements;  
11 actual prices. Did you -- not just one price increase  
12 announcement. Price increase announcements generally, does  
13 your model analyze the relationship between the price increase  
14 announcements generally and actual prices? Yes or no.

15 MR. MARTIN: Your Honor, I'm going to object; asked  
16 and answered.

17 THE COURT: I think it's been asked and answered  
18 several times and you asked the question a variety of different  
19 ways, but she's answered the question.

20 MR. BERNICK: Okay.

21 Q Where in the report --

22 THE COURT: Sustained.

23 Q Where in your report do you set out the relationship  
24 between the price increase announcements and the actual prices?

25 MR. MARTIN: Objection. That's not what she said.



1 MR. BERNICK: Your Honor, that's that --

2 THE COURT: I'll overruled that objection.

3 If it's in your report. Go ahead.

4 A I didn't try to connect the individual price increase  
5 announcements with particular changes in the prices.

6 Q Well, now you just said "individual." I'm not asking about  
7 individual. I'm saying: Where in your report can we find your  
8 analysis of the relationship between price increase  
9 announcements generally and actual prices?

10 A Okay. It's probably useful to think of -- remember,  
11 there's the benchmark period and then there's the conspiracy  
12 period. To the extent that in the benchmark period there were  
13 as part of the competitive process there were price increase  
14 announcements and to the extent that they were effective, those  
15 are in the prices in the benchmark period. So they're captured  
16 in the model.

17 To the extent that price increase announcements were  
18 coordinated by the conspiracy during the conspiracy period, I  
19 don't want to have them in the model. I'm trying to estimate  
20 what the prices would have been in the absence of coordinated  
21 activity, in the absence of collusion.

22 So I'm not trying to connect price increase  
23 announcements that were made during the conspiracy with  
24 particular changes in the price. That wasn't necessary for  
25 what I was trying to do. I'm trying to estimate the effect of

1 the conspiracy and quantify the effect of the conspiracy. So  
2 I've captured the extent to which price increase announcements  
3 are part of the competitive process, they're in the prices for  
4 the benchmark period, and those are captured in the model.

5 Q My question --

6 MR. BERNICK: If I could just have the answer read  
7 back, I think the answer was in there someplace but --

8 THE COURT: Don't say that.

9 MR. BERNICK: I would like to have the answer read  
10 back.

11 Q And I want to focus very carefully on one part of what you  
12 said.

13 MR. BERNICK: So if we could just have it read back.

14 THE COURT: Go ahead, Walter, read it back.

15 (The last answer is read.)

16 MR. BERNICK: That's what I want to focus on, Dr.  
17 Marx.

18 Q You were not trying to connect price increase announcements  
19 during the conspiracy period with particular changes in price.  
20 Correct?

21 A Correct.

22 Q This is all the conspiracy period. All my questions are  
23 going to be conspiracy period. Okay?

24 A Okay.

25 Q Price increase announcements during the conspiracy period

1 with actual prices. Right?

2 A That's correct.

3 Q We can't find that in your report. Correct?

4 A That's a different question.

5 Q We cannot find that in your report. Correct?

6 A I didn't do that.

7 Q You didn't do it?

8 A That's correct.

9 Q Okay. So if the issue is whether there was an impact of  
10 these price increase announcements with respect to actual  
11 prices during the conspiracy period, you could think of  
12 developing a model that actually looked to the relationship  
13 between the two during the conspiracy period and compared it to  
14 the relationship between the two in the benchmark period.  
15 Right?

16 A You could think about doing that, yes.

17 Q Well, in fact, isn't it true that other econometricians  
18 have developed those kinds of models that specifically focus on  
19 the price increase announcements?

20 A Are you talking about other economists in this case?

21 Q No.

22 A I'm not sure what you're referring to.

23 Q Is there anything that stopped you from doing just that  
24 analysis; to compare how price increase announcements affected  
25 prices during the conspiracy period with how they affected

1 prices outside the conspiracy period? Anything to stop you  
2 from doing that?

3 A Just the fact that my assignment was to look at whether the  
4 conspiracy was effective and quantify the extent to which it  
5 was effective. I think if you were trying to have an opinion  
6 about whether there was a conspiracy, a liability opinion, you  
7 might be interested in doing that kind of analysis.

8 Q Okay. That's also fair.

9 So certainly, Doctor, there was nothing stopping Dr.  
10 Raiff from doing that analysis of the price increase  
11 announcements and prices in his work, was there?

12 A Well, yeah. I mean, there was, because we know from your  
13 expert's interview of Mr. Bernstein at BASF, that sometimes  
14 they issued price increase announcements of 10 percent hoping  
15 for 5 percent and then being happy with 4 percent, and  
16 sometimes they issued price increase announcements just in an  
17 attempt to keep the prices from going down. And I think you  
18 heard testimony from Mr. Dhanis who said the same thing, that  
19 sometimes they would issue the price increase announcements  
20 just to keep the prices from going down.

21 So if you're looking for price increase announcements  
22 and you see there was no change in price, that might have been  
23 effective, that might be exactly what they were trying to do.  
24 So it's not even clear to me what you would be looking for in  
25 the analysis, and I don't think it was clear to Dr. Raiff

1 either.

2 Q Well, you just told us that this kind of work would have  
3 been part of a liability analysis. Right?

4 A I think it might be the kind of thing you might see in a  
5 liability analysis, yes.

6 Q Okay. And that analysis, just so we're clear what we're  
7 talking about --

8 A I'm sorry, sir. You said to focus just on the conspiracy  
9 period. But for the liability analysis you would need to go --  
10 you would need to have a benchmark, a control period.

11 Q Right. But we do both. So the whole idea -- let's make  
12 sure we're being straight with what we're talking about. I'm  
13 sure you are, I'm not sure I am.

14 Price increase announcement. You have an existing  
15 price. Price increase announcement comes out saying: We want  
16 to go up \$.06. That's what they do. Right?

17 A You see letters that will announce a proposed price  
18 increase, yes.

19 Q And then at the point of the effective date, the question  
20 is whether the prices actually go up, or stay the same or go  
21 down. Right?

22 A The question is whether the price changed in a way that's  
23 different from what it would have --

24 Q Yes.

25 A -- in the absence of the price increase announcement.

1 Q Sure. Sure. Exactly.

2 These relationships you could study. Correct?

3 MR. MARTIN: Objection. It goes beyond the scope of  
4 her substitution order.

5 THE COURT: She can answer it.

6 Go ahead.

7 MR. MARTIN: Sure.

8 Q These are relationships you can study both during the  
9 conspiracy period and outside the conspiracy period. Correct?

10 A If by "study" you mean you can look at the graphs, yes, the  
11 jury can look at the graphs.

12 Q But you could do a quantitative analysis, a quantitative  
13 analysis too if you want to.

14 A I'm not sure what you're suggesting specifically.

15 Q Could you do a quantitative analysis on whether the price  
16 increase announcements were more effective, either partially  
17 effective or wholly effective, during the conspiracy period  
18 than they were outside the conspiracy period? Could you could  
19 that analysis if you wanted to?

20 A Only if you knew what it meant for it to be effective.  
21 Only if you knew what their goals were. If they were using the  
22 price increase announcements to prevent the price from going  
23 down or from going down as much or as fast, if you knew what  
24 that goal was, you could measure -- you could measure it  
25 against that objective, yes.

1 Q Even if you knew what the goal was, if you have the two  
2 different periods, the conspiracy period and the non conspiracy  
3 period, you can see whether these price increase announcements  
4 worked more, had more of an effect during the conspiracy period  
5 than during the non conspiracy period. Correct?

6 A I guess you could do the comparison, yes.

7 Q Okay. And the point is that nothing stopped Dr. Raiff from  
8 doing that comparison. Correct?

9 A Well, yeah, of course he didn't do it, he wasn't trying to  
10 assess whether there was a conspiracy. His -- the task that he  
11 had was to ask whether the assumed conspiracy was effective,  
12 and if it was effective, to quantify the extent to which it was  
13 effective.

14 This is the kind of thing that would speak to whether  
15 there was a conspiracy, and that wasn't part of what he was  
16 asked to do.

17 Q And not part of what you're addressing. Right?

18 A I didn't understand what you said.

19 Q And not part of what you're addressing. Correct?

20 A Right.

21 Q Okay. But even if your goal is just to find the effect of  
22 the conspiracy, if you did your analysis and said, during the  
23 benchmark period there was, let's say, a 50 percent impact and  
24 during the conspiracy period there's a 75 percent impact, you  
25 could quantify damages just on the basis of that, couldn't you?

1       A     Absolutely not.  You don't -- suppose in the conspiracy  
2       period prices would have been going down in the absence of  
3       aggressive attempts to coordinate price increases and to show  
4       the industry that, you know, we're going to maintain higher  
5       prices, coordinated collusive price increases, unless you have  
6       a model that tells you that in the absence of those price  
7       increases prices would have otherwise been going down, this  
8       type of thing does not allow you to quantify the effects of the  
9       conspiracy.

10      Q     But you would have that, because all you have to do is  
11      include your price increase announcement in your multiple  
12      regression model along with manned and cost and have two  
13      different periods, the benchmark period and the conspiracy  
14      period, you could tease out whether the price increase  
15      announcements were more effective, couldn't you?  I mean, other  
16      people have done it.  Right?

17      A     I don't know whether you'd be able to be successful in  
18      teasing that out or not.  Dr. Raiff didn't do that.  He took a  
19      different approach to quantifying the effects of the  
20      conspiracy.

21      Q     So bottom line:  Price increase announcements about which  
22      the jury has heard, we cannot find them in your model as a  
23      variable.  True or not?

24      A     I think you've already asked that.  They're not a variable  
25      in the model.



1 Q Did you ever consider -- sorry.

2 A I'm -- you already wrote it there.

3 Q No quantitative analysis. Not a variable in the model,  
4 you're right, I repeated myself. The Court is very familiar  
5 with this failing of mine.

6 So, and if we want to know from the plaintiff -- are  
7 you aware of anybody who has analyzed for the plaintiffs in  
8 this case whether the price increase announcements were  
9 effective or not?

10 A What do you mean, quantitative analysis? No, nobody's done  
11 that.

12 Q And you are of the view, are you not, Dr. Marx, that if you  
13 don't have a quantitative analysis, you're dealing with second  
14 best? In your field, the quantitative analysis is the first  
15 best and non quantitative is the second best. Correct?

16 A You're asking me about whether there's a quantitative  
17 analysis addressing the question that I wasn't asked to address  
18 and Dr. Raiff wasn't asked to address, so that analysis hasn't  
19 been done.

20 The analysis that I reviewed and that Dr. Raiff did is  
21 focused on whether the assumed conspiracy was effective and  
22 quantifying the extent to which it was effective.

23 Q And therefore you did not get down into the details of this  
24 particular contention. Correct?

25 A I'm not sure what you mean.

1 Q I'm saying, you didn't get down into the contention that  
2 there was an agreement to suppress competition in an effort to  
3 achieve consensus about price increases and efforts to make  
4 those prices effective, you didn't get down into the specifics  
5 of how this was achieved or not achieved in your analysis.  
6 Fair?

7 A I'm not exactly sure what you mean. I looked at the  
8 evidence related to what was done and the coordinated activity,  
9 but I didn't try to connect in the model any individual, for  
10 example, price increase announcements to particular changes in  
11 the price.

12 Q Nor did you in the model try to connect -- and I think you  
13 have said this -- you didn't try to connect price increases  
14 generally to actual prices. Correct?

15 A I'm not sure what you mean by the difference between prices  
16 and price -- price increases and prices.

17 Q A price; you did not seek to connect price increase  
18 announcements generally to actual prices. Correct?

19 MR. MARTIN: Your Honor, asked and answered.

20 THE COURT: I think it's been asked and answered.  
21 Sustained.

22 MR. BERNICK: That's fair, I'll press on.

23 BY MR. BERNICK:

24 Q Let me go on to the model itself just to indicate that we  
25 are making some progress here.

1 MR. BERNICK: You can switch the charts.

2 Q I want now to ask you about the model or models.

3 It's true, is it not, that the models are really the  
4 heart of your work and Dr. Raiff's work in this case. Fair?

5 A I agree.

6 Q And is it also true, is it also true that the models are  
7 essential to the plaintiffs' case?

8 A I don't think I can speak to that. I don't know.

9 Q Okay. Well, that's fine.

10 THE COURT: I don't think that's in the realm of her  
11 opinions.

12 MR. BERNICK: Okay. Fair enough, your Honor.

13 Q Let me get at it this way: Is it fair to say -- I'll erase  
14 it.

15 You said that you had two assignments: One assignment  
16 was to determine the impact of the alleged conspiracy and the  
17 other was to determine damages. Do you recall that?

18 A I think of the two as being, first, whether the conspiracy  
19 had an effect.

20 Q Okay.

21 A And then second, quantify what that effect was. So it's  
22 kind of whether there was an impact, and if so, what was the  
23 impact.

24 Q Whether the alleged conspiracy had an impact -- or effect?  
25 Is that better?

1 A Effect would be the word I would use.

2 Q Had an effect?

3 A I'm not sure it's that important.

4 Q And if so, the damages. Right?

5 A Yes.

6 Q If there is no model in this case, are you aware of any  
7 alternative, any alternative for establishing whether the  
8 alleged conspiracy had an effect? Without the model, can you  
9 do it?

10 A My opinion that it has an effect is based on the model; my  
11 analysis, the model, and my review of the evidence.

12 Q Okay. Is that true for -- this is a 10-year conspiracy.  
13 Right?

14 A Yes.

15 Q And you say that you can demonstrate that the conspiracy,  
16 or that someone could demonstrate the conspiracy had an impact  
17 across the board, all products, all 10 years without doing a  
18 quantitative analysis. Is that your testimony?

19 A No. I'm sorry --

20 THE COURT: Excuse me. Can I see you at sidebar?

21 MR. BERNICK: Sure.

22 (At the sidebar.)

23 THE COURT: What concerns me is that you're starting  
24 to ask her about legal things. She's not a lawyer.

25 And you didn't object.

1           But whether or not there's other evidence in the case  
2           that would establish certain things. Unless -- she's not a  
3           lawyer and I'm getting -- there seems to be areas where you're  
4           going to opining about the case, whether or not without this,  
5           is there a case.

6           How would she know that? I don't know. Maybe there  
7           is a case.

8           MR. BERNICK: I'll rephrase the question because my  
9           intent is not to do that.

10          THE COURT: Okay:

11          MR. BERNICK: My intent is to focus on the idea to be  
12          able to quantitatively establish an impact on an informed  
13          basis, that's where I'm going.

14          THE COURT: Maybe ask it a different way.

15          MR. BERNICK: Sure.

16          THE COURT: But areas that are asking her to render  
17          what I think are legal opinions --

18          MR. BERNICK: Right.

19          THE COURT: -- as to the overall case, et cetera, are  
20          objectionable. But I thought I would bring it up.

21          MR. BERNICK: I appreciate that.

22          MR. MARTIN: Thank you.

23          (In open court.)

24          BY MR. BERNICK:

25          MR. BERNICK: Thank you, your Honor.

1 Q Dr. Marx, are you aware of any way to do these things,  
2 these assignments quantitatively; that is, determine whether  
3 the alleged conspiracy had an effect, and if so, the damages?  
4 Is there any way to do that quantitatively without a model?

5 A Well, I'd have to think about that. You could certainly do  
6 it with a model. I suppose there might be some way that's not  
7 coming to my mind to do it. The obvious way to do it is with a  
8 model, to do a statistical model. Nothing is coming to my mind  
9 right now.

10 Q Okay. Now I want to talk a little bit about the modeling  
11 approach and then I'm going to come back and talk about some  
12 aspects of that. So just the approach in general.

13 As I understand it, to do the model you need data  
14 sets. Right?

15 A It's a statistical model so you're pretty much lost unless  
16 you have data to work with.

17 Q And Dr. Raiff put those together?

18 A Yes, sir.

19 Q Then you need the --

20 A Well, let me just say, they were provided by the alleged  
21 conspirators.

22 Q Well, the data was --

23 A Right.

24 Q But the data, not all the data makes its way into the  
25 model. Right?

1 A They're all in model. I'm sorry, I don't --

2 Q Well, for example --

3 A -- understand you're asking.

4 Q In the benchmark model, the benchmark model, the industry  
5 model --

6 A Yeah.

7 Q -- that requires a data set that doesn't include all the  
8 data. Right?

9 A Are you -- are you making the point that when I do the  
10 estimation of what the competitive process is I'm only using  
11 the benchmark period?

12 Q No.

13 A Oh.

14 Q Not all prices are included, not all industry prices are  
15 included in the data set for the industry. Correct?

16 A Are you making the point that I focus on TDI 80/20 and --

17 Q No.

18 A I don't understand what you're asking.

19 Q You have all kinds of things. All the transactions came  
20 through as data.

21 A Yes.

22 Q And that came from the defendants, and Dr. Raiff also got  
23 information from the plaintiffs, and he compared the two.

24 Correct?

25 A Yes.

1 Q Okay. And in order to make the model go for the industry  
2 as a whole, the first step model, he used not all of the data  
3 but a selection of the data. Correct?

4 A He used all of the data.

5 Q Well, he didn't -- first of all, he only worked with  
6 benchmark products. Right?

7 A That is what I asked you before. When he did the  
8 industry-wide model for TDI he's focusing on TDI 80/20.

9 Q Right.

10 A That particular product.

11 Q Right. He also took out outlier price transactions.  
12 Correct?

13 A Yes.

14 Q Okay. So that's all I'm saying, is that not all of the  
15 data ended up getting used in the model. He made judgments  
16 about what to include. Fair? I don't want to get hung up on  
17 it --

18 A I think of it as including all of the data.

19 Q That's fine.

20 Then there are the variables. Right?

21 A Yes.

22 Q And then with the data sets and the variables, the  
23 regression is run, and that's that kind of calculation.

24 A Yes.

25 Q And then you end up with a formula, an equation. Right?



1 A Yes.

2 Q Okay. And that formula together with the data and the  
3 variables, that formula, in essence, it's the model. Am I  
4 right about that?

5 A Yes. Sometimes people use the model to refer to kind of  
6 holistically all of this, some people use it to refer just to  
7 the equation. I'm not sure it's that important.

8 Q Now, this approach was the same approach used for all three  
9 models: TDI, MDI and polyols. Correct?

10 A The approach is the same.

11 Q Okay. So this is a common denominator for his work. Is  
12 that fair?

13 A That's right.

14 Q Okay. Is it also true that in the case of all of the  
15 models, the industry models, the data sets ran for 10 years,  
16 the conspiracy period alleged, 10 years?

17 A The conspiracy period is 10 years, yes.

18 Q Ten years. Then the benchmark periods were even longer?

19 A Yes.

20 Q Okay. And all of the suppliers were allegedly  
21 co-conspirators. That would be the five companies. Right?

22 A Yes.

23 Q So it would be 10 years, all suppliers. All the data sets  
24 were geared towards an assumed 10-year conspiracy and all of  
25 the suppliers: Dow, Huntsman, BASF, Bayer, Lyondell. Correct?

1 A Yes. You've got 10 years written there. You make it look  
2 like there were only 10 years of data. There's 17 years of  
3 data.

4 Q This is just the conspiracy period.

5 A Okay.

6 Q And there's another seven for the benchmark period. It's  
7 all that thing.

8 A Yes.

9 Q Okay. Now, isn't it true that the model that comes out of  
10 all of this is, in a sense, custom made to that data? That is,  
11 you have variables, but the equation that comes out of here,  
12 the formula is driven by the data that you have, the stuff, and  
13 then the variables. Correct?

14 A Well, it's a regression, so you're using the data to  
15 estimate the -- the equation to estimate the relationship  
16 between the underlying cost and demand factors and the price.

17 Maybe I'm not understanding what you're asking.

18 Q No, no, it's a very simple concept. The data drives the  
19 formula; that is, the formula that comes out is kind of  
20 tailored made to the data sets that you're working with.

21 A I disagree with what you're saying, "tailor made."

22 I mean, the data -- the data tell you what the  
23 relationship is between the price and demand, the cost and  
24 demand factors, and the price.

25 Q Okay. The data tell you. So you've got to -- it drives --

1       that's fine. The data tells you what the result is going to be  
2       once you select the variables. Correct?

3       A     I mean, it's awkward how you're saying the data tells you  
4       what the results are going to be.

5                You're using the data to estimate what that  
6       relationship is --

7       Q     Okay.

8       A     -- between the cost and demand factors and the prices.

9       Q     And if you -- this is the key point. This -- this data  
10       set, the 10 years for the alleged conspiracy and the seven for  
11       the benchmark period is based on an assumption that you were  
12       given. The assumption being, it's a 10-year conspiracy  
13       involving these five suppliers. Correct?

14       A     Okay. I was assumed to -- I was instructed to assume the  
15       existence of the conspiracy.

16       Q     Right.

17       A     I was told that the allegation is of conspiracy between  
18       1993 -- sorry -- 1994 to the end of 2003. But I wasn't  
19       required to assume any particular periods to be used as the  
20       conspiracy period or the benchmark period. I looked at the  
21       evidence to tell me what would be an appropriate period of time  
22       to hold out as the conspiracy period and which periods of time  
23       would be appropriate to use as the benchmark period.

24       Q     Okay. So I'm not really -- I'm just saying, you made --  
25       you were given an instruction and then you did some homework on

1 your own and you decided 10 years is the right period, and then  
2 you have the benchmark period as well. Fair?

3 A I think it's a bit unfair to characterize what I did as  
4 "doing my homework."

5 I spent a long period of time doing a great deal of  
6 work in this case.

7 Q No offense. When it comes to lawyers and economists and  
8 experts, I feel that myself.

9 So you did a lot of work. Right?

10 A Yes, sir.

11 Q And on the basis of the instructions that you were given  
12 but also then a lot of work, you developed a model that you  
13 looked at and analyzed a model that assumed -- or that was  
14 based upon a 10-year conspiracy period of all of the suppliers.  
15 Fair?

16 A Yes.

17 Q Okay. Now, you left it up to the jury ultimately to  
18 decide, as they should, whether there is a conspiracy; and if  
19 so, how long it lasted. Again, that's not something -- as you  
20 said, that's not something you expressed an opinion on.  
21 Correct?

22 A Right.

23 Q Okay. So if the jury were to conclude in this case that  
24 the conspiracy period is different or involved different  
25 people, this model would be based upon a data set that doesn't

1 reflect the conspiracy years. Correct?

2 A Okay, that's wrong.

3 So, remember, the model that I have looks at the  
4 benchmark period, and so it's estimating the competitive  
5 process in the benchmark period and then predicting what prices  
6 would have been in the absence of a conspiracy.

7 So if there's no conspiracy, it's still a prediction  
8 of what the prices would have been. If one of the individual  
9 alleged conspirators is not part of the conspiracy it doesn't  
10 change that because the model is based on the benchmark period,  
11 the period that's free from the effects of the conspiracy.

12 Q Okay.

13 A So I suppose that -- well, I'll just stop there.

14 Q Right. So I understand that. You did the model on the  
15 basis of the information that you had, and you used 10 years  
16 based upon that information. I'm not questioning that.

17 A I didn't use the 10 years that were part of the alleged  
18 conspiracy. The model, the estimation of what the competitive  
19 process is uses the benchmark period.

20 Q Okay. I keep on -- I'll say that all the time. You used  
21 the model based upon 10 years conspiracy and seven years  
22 benchmark. Correct?

23 A Again, the model doesn't use the data from the conspiracy  
24 period, it holds that out.

25 Q Yes. Yes, okay.

1           So -- we're going to get to all of that, trust me.

2           So now the question is: If the jury were to conclude  
3 that the conspiracy was only two years or five years and it  
4 concluded only certain suppliers -- okay? Are you with me?

5       A    I think so.

6       Q    -- the model would not tell you the overcharges  
7 specifically in connection with that period, would it?

8       A    No, the model is the same. The model is still looking at a  
9 period that I think everyone agrees is relatively free of  
10 effects of conspiracy and looking at what the competitive  
11 process is in that period, and then estimating what the price  
12 would have been.

13           Now, if a decision is made that it's not appropriate  
14 to associate overcharges with particular transactions, you just  
15 wouldn't add them in.

16           Remember when I added up the transactions, the  
17 overcharge from each of the transactions, if there's some that  
18 for whatever reason you don't think should be included, they  
19 wouldn't be added in. It doesn't change the model.

20       Q    That's my whole point, Dr. Marx. What the jury does or  
21 says or concludes doesn't change the model. The model just  
22 remains exactly as it was before. Fair?

23       A    Yes. It's based on a period of time, it's based on the  
24 benchmark period.

25       Q    It's based on the benchmark period. But the overcharges

1 are based upon the data from the full 10 years.

2 A Oh, that's right.

3 Q Okay. So just so we're real clear, this model is based  
4 both on the seven years of benchmark, that data, and it's based  
5 upon 10 years that are assumed -- with your confirmation based  
6 upon what you've done -- are assumed to be the conspiracy  
7 period, and the overcharges that come out are 10-year  
8 overcharges. Correct?

9 A Okay. No.

10 So, you see where you've got the word "model" there by  
11 the formula? If that's what you mean by the model, that it's  
12 the formula, it does not depend on the 10 years of data that  
13 are in the conspiracy.

14 Q The overcharge does.

15 A Oh, sure, because the overcharge is the difference between  
16 the price they actually paid and the price that's predicted.

17 Q All right. So, the benchmark model is what you're saying,  
18 the other periods, is not based upon the data from the  
19 conspiracy years. Fair?

20 A That's right.

21 Q Okay. But the overcharges, all the big numbers there are  
22 based upon the data from the 10 years of the alleged  
23 conspiracy. True?

24 A Sure, yeah. You have to look at what they actually paid  
25 and compare it to what they would have paid in the absence of

1 the conspiracy.

2 Q And so this gives you 10 years, all five of overcharges,  
3 and you listed them on the screen. Correct?

4 A That's the calculation I did, yes.

5 Q Now, if the jury were to conclude that the conspiracy is  
6 for a shorter period of time or doesn't include Lyondell, the  
7 model doesn't tell you what the overcharges are for a shorter  
8 period of time and a more limited number of suppliers.  
9 Correct?

10 A Sure it does. You would just only add up the transactions,  
11 the overcharges associated with the transactions that you think  
12 should be included.

13 Q But you haven't done that.

14 A Well, I mean it -- it would be straightforward for me to  
15 only add up a certain number of years.

16 Q Nowhere in your report do you specify a lesser period of  
17 time or a smaller number of suppliers and alternative damage  
18 figures. Correct?

19 MR. MARTIN: Your Honor, I'm going to object and I  
20 would like to talk to you.

21 THE COURT: Why don't we take a recess right now for  
22 lunch, ladies and gentlemen. We'll see you back here at 1:25.

23 Thanks very much.

24 THE LAW CLERK: All rise for the Jury.

25 (The Jury leaves the courtroom.)



1 THE COURT: Doctor, you can step down. Thank you.

2 (Witness temporarily excused.)

3 THE COURT: Go ahead, let's hear your objection before  
4 we break for lunch.

5 MR. MARTIN: We weren't going to be talking about --  
6 we weren't going to challenge the benchmark period. This is  
7 effectively challenging the benchmark period. What the jury  
8 finds will be based on a subset of evidence.

9 Dr. Marx's knows facts that she's not allowed to tell  
10 this jury, that tells her this is a 10-year conspiracy.  
11 Economically that's the right period of time. The benchmark  
12 period should include '94, '95, and '96.

13 If we're going to go down this road she'll have to  
14 have an opportunity to explain why she believes as a economist  
15 that's the time period that should be excluded. Everything  
16 he's doing now is talking about a benchmark period.

17 THE COURT: Hold on.

18 Go ahead.

19 MR. BERNICK: We've scrupulously avoided challenging  
20 the benchmark period. I've not said a word about how the  
21 benchmark period was set. What I've said is that they've  
22 let -- I'm sorry.

23 THE COURT: Go ahead. Let's hear.

24 MR. BERNICK: What I've said is that the benchmark  
25 period is, like I said, all that is fine.

1           The question is, it's up to the jury as she herself  
2       acknowledges and she says in her testimony, to decide what the  
3       actual conspiracy is. And it's a property of the model that it  
4       doesn't work that way. And our experts will testify about the  
5       whole model fails if you change the data set.

6           She's now testifying -- I'm asking her, is there  
7       anywhere where the model has been used to calculate shorter  
8       periods of time?

9           And she's saying no.

10          And that's correct. So I'm not challenging the  
11       benchmark period -- I didn't say a word precisely because of  
12       this argument.

13          THE COURT: So what are you implying, there's evidence  
14       that there's a limited -- a lesser term of the conspiracy?

15          MR. BERNICK: I'm saying that the jury has the  
16       latitude to find it.

17          THE COURT: I know. Go ahead, let me hear you, Mr.  
18       Martin.

19          MR. MARTIN: That's the thing. He's saying what the  
20       conspiracy period is. By definition, that's exclusive.

21          What the jury decides will be based on the evidence  
22       before the jury. What her decision is is an economic decision.  
23       There are facts there that if he keeps going down the road I  
24       would say he's opening the door.

25          MR. BERNICK: I did not ask her --

1           THE COURT: Open the door to, what would you want to  
2 bring?

3           MR. MARTIN: The information she learned about when  
4 the conspiracy started and the evidence of --

5           THE COURT: You mean the Bayer conversations?

6           MR. MARTIN: The stuff that the Court is very  
7 reluctant to admit. But again, it is an issue, and that is her  
8 response, it's at least an economic response.

9           MR. BERNICK: Again, I'm not challenging her choice of  
10 the benchmark period, I'm not challenging even her attribution,  
11 as you'll see, of the variance to the conspiracy as a whole.  
12 All I'm saying is the model doesn't work piecemeal. That is  
13 the only proposition that I'm going for, is the model does not  
14 work piecemeal. That's a characteristic of the model.

15           If you want me to put -- I'll be happy to put my  
16 questions solely in those terms.

17           MR. MARTIN: Why would it work piecemeal? She knows  
18 what the evidence is. Why would she as an economist develop  
19 something that includes a conspiratorial time period  
20 effectively? If it's not in the conspiracy, it is in the  
21 benchmark period. There's no -- it's one or the other.

22           THE COURT: What if he argues based on the evidence,  
23 not the expert, but based on the evidence that, whatever, maybe  
24 if he argues that if there's evidence to support it, that the  
25 conspiracy was a more limited time?

1           MR. MARTIN: Then that's the thing. From her  
2 perspective she would say, okay, you can argue that, but I as  
3 an economist kept that data out of the benchmark period because  
4 I satisfied myself it was tainted by collusive conduct. And  
5 she did a lot of work for that.

6           MR. BERNICK: I didn't question that at all. I said  
7 simply: If the jury decides -- and I'm happy to put it in any  
8 way that doesn't implicate the benchmark period --

9           MR. MARTIN: It's unfair, because now he's asking --  
10 he's putting on her what the jury will decide based on evidence  
11 that it will see and she knows is different.

12          THE COURT: Go ahead.

13          MR. BERNICK: It's not about the collusive evidence,  
14 it's about just how the model was built. The model was built  
15 in a certain way --

16          THE COURT: What if data were taken out -- what if,  
17 for instance, Lyondell or one of them was not in the -- you  
18 know, for some reason the jury concluded they were not a  
19 co-conspirator, would that affect your opinion?

20          MR. MARTIN: I'd have to ask her. I know that her  
21 first answer is: I know there's evidence that Lyondell was a  
22 conspirator so it was right for me to include that information.

23          THE COURT: Right, okay.

24          MR. BERNICK: But the answer to your Honor's question  
25 is, what would that do to the model if the jury were to

1 conclude that Lyondell is not a supplier?

2 The model fails. Because the model is based on a  
3 regression that uses all of this data. That's the problem.

4 We've talked about this before, your Honor. I  
5 can't -- but I need this information from her because she's the  
6 architect -- not the architect, but she's the proponent of the  
7 model. And that's all that I'm going for, that's how I set  
8 this whole thing up is just how the model works. I didn't ask  
9 her a word about the evidence of collusion.

10 THE COURT: I'll see you back here at 20 after. See  
11 you back at 20 after. thanks.

12 (A luncheon recess is taken.)

13

14 A F T E R N O O N S E S S I O N

15

16 (Proceedings resume - Jury not present.)

17

18 L E S L I E M A R X, resumes testifies further as follows:

19

20 THE COURT: Before we get started it looks like we're  
21 okay with Juror No. 10. His employer has worked out something  
22 with him. Okay.

23 Mr. Bernick, I think if you rephrase your question,  
24 instead of saying, "If the jury were to conclude or take out  
25 certain dates or take out information, what would happen to the

1 model," if you would just ask her: "If certain information,  
2 certain years might have been -- what affect would that have on  
3 the model," I think that's what you're trying to get to, isn't  
4 it?

5 MR. BERNICK: Well, the question is --

6 THE COURT: I think it's inappropriate to ask the  
7 question: "If the jury were to take out," or "if the jury were  
8 to conclude." Okay?

9 MR. BERNICK: Okay, I've got it.

10 THE COURT: But you can ask her --

11 MR. BERNICK: Sure.

12 THE COURT: -- if data were taken out or if  
13 information or years were taken out, what the effect is on the  
14 model, I think that would be appropriate.

15 MR. BERNICK: Remember that, Dr. Marx, that's what I'm  
16 going to ask you in a minute.

17 THE COURT: She has good memory, don't worry about  
18 that.

19 (Laughter.)

20 THE COURT: You don't have to remind her of that.

21 THE DEPUTY CLERK: All rise for the Jury.

22 (Jury present.)

23 THE COURT: Please be seated. Welcome back.

24 CROSS-EXAMINATION CONTINUES

25 BY MR. BERNICK:

1 Q Good afternoon, Dr. Marx.

2 A Good afternoon, Mr. Bernick.

3 MR. BERNICK: Good afternoon, ladies and gentlemen.

4 Q Dr. Marx, where we left off, I was asking some questions  
5 that got back to the seven-year benchmark period and the  
6 10-year conspiracy period that are built into -- that are part  
7 of the design of the model. You remember that?

8 A Yes.

9 Q Okay. And the question, I just followed up on some  
10 questions that talked about the data sets that were used that  
11 tell you in some fashion or tell -- inform the model, the  
12 variables and then the benchmark model itself. Do you recall  
13 that?

14 A Yes.

15 Q So now my question -- I was almost done writing it: If you  
16 take years or suppliers out of these data sets -- let's say you  
17 take a year out and you take a supplier out -- does the model  
18 work?

19 A If you -- remember, the model is only estimated on the  
20 benchmark period.

21 Q Yes.

22 A So, if you take something out of the conspiracy period it's  
23 not going to affect the prediction.

24 Q Right. But if -- okay. But will it tell you, if you  
25 remove the data with respect to the conspiracy, alleged

1 conspiracy years, if you take that data out, will the  
2 overcharge calculation change?

3 A If you take the conspiracy data out it doesn't have any  
4 affect on the model because it's based on the benchmark --

5 Q I understand that.

6 A But now when you would go to calculate whether there was an  
7 overcharge, if you didn't have a price for a particular --  
8 remember the calculation, the overcharge is by  
9 transaction-by-transaction. So if you had taken a transaction  
10 out, then when you went to calculate an overcharge for that  
11 transaction it wouldn't be there. So you wouldn't -- if you  
12 took it out, when you were adding up the overcharges from the  
13 different transactions, you just wouldn't have an overcharge  
14 for that missing transaction.

15 Q Okay. So let me just -- let me just get there. I'll use  
16 another...

17 So we've got the pMDI board up. So if we took and we  
18 only -- let's say we took out '94 to '97. Okay. Are you with  
19 me? Can you see that?

20 A Not exactly. If you could move the podium.

21 That helps. Thank you.

22 Q If you took those out, does the model tell you what the  
23 change to the overcharge is?

24 A There wouldn't be any change to the predictive price  
25 because remember that the red line is based on the control



1 period, it's based on the prices and costs and demand in the  
2 benchmark period. But when in the second stage, when we looked  
3 over here at the individual transactions, when you went to look  
4 at individual transactions, if you've taken those transactions  
5 out of the data, then they just won't be there. So you won't  
6 be calculating an overcharge for them for the missing stuff.

7 Q Let me ask you about that. This is a predictive model as  
8 you told the jury. Right?

9 A Yes, sir.

10 Q And the way a predictive model works, at the least as I've  
11 come to understand it, is that you can literally kind of start  
12 at the beginning with that formula, and as the data gets -- the  
13 data year-by-year or month by month gets processed in the  
14 model, through the model, this but-for line is predictive.  
15 Right?

16 A Yes.

17 Q Okay. Now, you have said that -- you pointed out that the  
18 model starts, the model predicts beginning here and it connects  
19 back up every there. Right?

20 A That's right.

21 Q Okay. But let me just ask this because this is kind of a  
22 little bit of an aside. When Dr. Raiff developed this model in  
23 the first instance, you weren't involved. Right?

24 A That's correct.

25 Q Okay. And when Dr. Raiff developed that model, he had all

1 of this data in front of him. Right?

2 A When you mean "all of this data," I'm not sure --

3 Q I'll rephrase. That's not so good.

4 So when you talked to the jury on direct examination,  
5 you mentioned that this is not prediction like when you think  
6 about prediction in the future, you're kind of predicting  
7 something that's already there.

8 A You're predicting something in the middle, yeah. It's a  
9 little awkward to use the word "prediction."

10 Q So when Dr. Raiff set out to do his work here, you weren't  
11 involved in all that we know of his work is the final model and  
12 the result of that model. Correct?

13 A Well, I have the work that's embodied in his report and I  
14 also was able to talk with his support team.

15 Q Okay. Was that something that happened recently?

16 A No.

17 Q Okay. So, but you don't have -- for example, he had the  
18 opportunity to look at all of this data and develop different  
19 alternative models. Correct?

20 A All I know is the model that he produced.

21 Q That's what I'm saying. Is that you know the model that he  
22 produced, but you don't know all the work that he did leading  
23 up to that model. Correct?

24 A I don't know.

25 Q Right. And so if he's got, you know, a high-powered

1 computer, which he does, he can -- you've indicated that the  
2 model enables him, or the method enables him to kind of go  
3 along and see how he's doing to match up or track. Right?

4 A No, the method -- he's just running a regression.

5 Q Right.

6 A He's just using the data, and objective criteria for  
7 determining which variables to include. So he doesn't have  
8 control over what it's going to predict.

9 Q Well, sure, he can pick different variables.

10 A He used an objective criterion for selecting the variables.

11 Q For the mandatory variables he just used his judgment.  
12 Right?

13 A Oh, you mean for the core variables?

14 Q Yes.

15 A Yeah, that's like the flour and the eggs and sugar. He  
16 included the key -- he included toluene for TDI, the core cost  
17 and demand enables for each one.

18 Q But he include -- you could say that, but he also included  
19 other factors that he had the ability to select different kinds  
20 of demand variables. Correct?

21 A I -- I just know the ones he included as his core variables  
22 and then the process he used to select the rest.

23 Q So how many times he experimented with this model, whether  
24 he did or not, you just don't know. Correct?

25 A I don't know.

1 Q Okay. So we now have this prediction line going along, and  
2 it links back up.

3 Isn't it true that one of the important aspects of  
4 this prediction line is that it has a variable called a lag  
5 variable?

6 A Yes. Remember when I did the equation, it was the previous  
7 month's price? That's what is often called a lag price. It's  
8 the price from the month before.

9 THE COURT: Just a moment. You just -- yeah. That's  
10 better.

11 A Sorry.

12 Q What that variable does is it provides kind of a --  
13 something of a continuity from time period to time period.  
14 Correct?

15 A Yes.

16 Q So whether that lag variable is run beginning at the  
17 beginning of the alleged conspiracy period, it kind of backs up  
18 a little bit and gives some weight to what the price was the  
19 day before. Correct? Or the time before?

20 A Right. It's -- when you say "lag variable," you mean the  
21 price from the previous month?

22 Q Right.

23 A And so it's calculating the prediction of next month's  
24 price based on this month's price and the cost and demand  
25 factors.

1 Q Okay. So now I want you to assume that the data with  
2 respect to three years is gone. Wouldn't that affect the lag  
3 price right here?

4 A No, because the -- remember, okay.

5 THE WITNESS: Could I stand up and point?

6 Q Well --

7 A I'll try to do it without -- I know you don't want me to  
8 stand up.

9 Okay. The model, the equation that's trying to  
10 capture the competitive process in the benchmark period only  
11 relies on the benchmark data. So that equation has not  
12 changed. And so all it -- all it needs is the one price in  
13 December of 1993, and that begins the prediction. Or you can  
14 start it at the beginning of 1992, wherever you start it.

15 Q Right over here.

16 A It doesn't ever use the information in the blue line during  
17 the conspiracy period. So if you were to take data out of the  
18 blue line in the conspiracy period, it has no effect on the  
19 prediction.

20 Q Would it use the lag price of this dot right back here?

21 A It's going to -- you have to start it somewhere. And so  
22 the red dots that we looked at before start in December of  
23 1993, and the green dots were started from January of 1992.

24 Q Yes. But the lag -- to do the lag price here --

25 A Yes.

1 Q -- you'd have to have a prior price.

2 A It's using the prior prediction. You know, it's -- what  
3 you want to do is capture the prediction about what the price  
4 would have been in the absence of the conspiracy. And so you  
5 need in each month to estimate what the competitive price would  
6 be, and then for the next month you look back at what the  
7 estimated -- what the predicted competitive price was in the  
8 appeared before and go forward.

9 So it's looking back only at the prediction from the  
10 period before, it's not referencing the blue line.

11 Q Okay, that's fine.

12 So now the question is, if you took these years out,  
13 if -you took them out, what would your model say -- could your  
14 model say anything about overcharge for that period of time  
15 with the remaining period of time only?

16 MR. MARTIN: I'll object. This has been asked and  
17 answered.

18 MR. BERNICK: No.

19 THE COURT: No. If she can answer it, go ahead.

20 A Again, in this stage where we estimate what the overcharges  
21 would be, you're adding up the overcharges from each individual  
22 transaction. So to the extent you're saying these transactions  
23 are no longer there, when you go to add them up they just don't  
24 get added in. So if you took out data in the conspiracy period  
25 and there were overcharges associated with that period of time,

1       then you get a lower number when you add up the overcharges.

2       Q     What if you didn't know there were overcharges during that  
3       period of time?

4       A     Regardless of what's going on in that period of time, if  
5       you don't have that data, there won't be any overcharges for  
6       that period of time.

7       Q     Would the absence of that data affect the statistical  
8       significance of the difference between the two curves?

9       A     Let me think.

10               I think it would be -- are you saying I don't have the  
11       blue line for that period of time?

12       Q     Right.

13       A     Then you'd have to -- when you did the calculation of  
14       statistical significance you'd have to use the data that you do  
15       have. And so I don't have any reason to think that it would  
16       change the statistical significance. But it's true, you would  
17       need to -- you wouldn't -- right now the statistical  
18       significance that calculation is using is that information.

19       Q     The statistical significance calculation is based upon the  
20       totality of the difference between these two curves. Correct?

21       A     Actually, no.

22               The P value calculation that Dr. Raiff -- I'm sorry  
23       about getting into the statistics here. But the confidence  
24       level calculation that Dr. Raiff is doing is based on the  
25       following experiment: Suppose there's no conspiracy, suppose

1       there was no conspiracy at all. Suppose it had no effect.  
2       What is the probability that we could have gotten an overcharge  
3       like the one that he got?

4               And the result is that for TDI there's no way you  
5       could have gotten his result if there was no overcharge.  
6       That's the 99.4 confidence level.

7               And so that calculation of his confidence levels, it  
8       doesn't use the conspiracy period blue line at all.

9       Q     So -- that's fine. So you're saying that the difference  
10      between -- the difference between the red line and the blue  
11      line, which is -- well, the difference at each point represents  
12      the overcharge. Right?

13      A     That's -- well, this is the industry-wide -- when I'm doing  
14      the calculation of overcharges for the plaintiffs I'm not using  
15      that difference.

16      Q     I'm talking about this.

17      A     Okay.

18      Q     So the overcharge is measured at a particular time and  
19      represents the difference between the blue line and the red  
20      line. Right?

21      A     That's right.

22      Q     Okay. And that difference, whether that -- that difference  
23      is statistically significant, is measured by reference to just  
24      these two data points?

25      A     No. The calculation --



1 Q Let me rephrase it. I'm sorry.

2 Is judged solely by reference to this point in time.

3 Right?

4 A The question that I was looking at when I was talking about  
5 statistical significance is the overcharge as a whole.

6 Q No, I'm not talking about that.

7 A Okay.

8 Q I'm just talking about this model.

9 Does this model determine statistical significance by  
10 looking at the whole 10 years, or part of the 10 years?

11 A It's asking the question: Could you have gotten the  
12 overall overcharge over the whole 10 years? Could you have  
13 gotten the estimate that Dr. Raiff got if, in fact, there was  
14 no conspiracy.

15 Q It's whether there is statistically significant difference  
16 between this line, which shows overcharge, and this line which  
17 shows no overcharge; that is, that if, in fact, the model was  
18 right here on the actual price line, the overcharge would have  
19 been zero. That's the Null (phonetic) case. Right?

20 A If the prediction for that month was on top of the blue  
21 line, yes, then you have no overcharge then.

22 Q Right. And so the statistical test says: Is there a  
23 statistically significant difference between the red line and  
24 the blue line with respect to this model. Correct?

25 A The exercise that Dr. Raiff did in quantifying the

1 statistical significance is looking at the overcharge as a  
2 whole.

3 Q Right. And so to determine whether the overcharge as a  
4 whole, this whole area here is statistically significant, you  
5 take all 10 years of actual prices and all 10 years of but-for  
6 prices and you ask the question: Is there a statistically  
7 significant difference between the two. Correct?

8 A Not exactly. The way these statistical tests are done is  
9 you have it with reference to some baseline hypothesis. And  
10 the baseline here is if there were no conspiracy. So if there  
11 had been no conspiracy, if there were no overcharges, could we  
12 have gotten an estimate like this.

13 Q Right.

14 A And those confidence levels speak to that and show that it  
15 would be extremely unlikely to have gotten results that we got  
16 if there had been no conspiracy, or no effective conspiracy.

17 Q Bear with me for a second, Dr. Marx.

18 This is the overcharge, the distance between the two.  
19 Right?

20 A For that month, yes.

21 Q And the Null case where there's no overcharge would be  
22 where the two lines overlap completely. Correct?

23 A If the two lines overlap completely, then you don't have an  
24 overcharge in that month. It's a little bit different from now  
25 you described the --

1 Q If this whole line were to overlap with the blue line,  
2 there would be no overcharge. Right?

3 A That's right.

4 Q Okay. And so now the question is, as the red line moves  
5 away, is there, given all the data that's around here, is there  
6 a statistically significant difference between the data -- I'm  
7 sorry -- is there a statistically significant different between  
8 the actual price data and this line down here? Correct?

9 A The calculation that Dr. Raiff did was looking at the  
10 overcharge as a whole over the 10 years.

11 Q Right. So my question is: If you took out three of those  
12 years, wouldn't that have an effect on the statistical  
13 significance of the two lines?

14 A No, because the exercise that he's doing in the calculation  
15 of those confidence levels is, suppose that there were no  
16 conspiracy. And so would it be possible to get a predictive  
17 price line that deviated that much from the actual price line  
18 if there was no conspiracy?

19 And the answer is definitely not for TDI; and very  
20 unlikely for the others.

21 Q But that determination is made with respect to all 10  
22 years. And if you don't have --

23 A It is --

24 Q I'm sorry. If you don't have all 10 years of data, you'd  
25 have to run the test again to see if it would change. Correct?

1 You'd have different data to use in making the assessment of  
2 statistical significance. True?

3 A Again, I've said this a couple of types, the estimate of  
4 the statistical significance is based on what economists or a  
5 statistician would call the Null hypothesis, and it's going off  
6 the benchmark of: Suppose there is no conspiracy, and could  
7 you have gotten as a result an overcharge estimate like Dr.  
8 Raiff got if there had been no conspiracy.

9 So that test is not actually referencing the blue line  
10 during the conspiracy period.

11 Q Let me go on to then ask about this particular case of  
12 statistical significance, that is pMDI. There's something  
13 that's not on the chart here. Right? Not shown. One of the  
14 things that's not shown is what the confidence interval is.  
15 Correct?

16 A The confidence interval is not on that picture.

17 Q Right. In fact, there is no indication of the data, where  
18 the data is for statistical significance with respect to this  
19 chart. Right?

20 A It's not on that particular.

21 Q Right. You can't tell at all from this chart anything  
22 about statistical significance. Correct?

23 A No, I don't think you could tell just from looking at that  
24 picture.

25 Q Right. So there are charts that have been done for pMDI.

1 MR. BERNICK: I'm going to pull up Demo Exhibit -- or  
2 Demo 10 for Dr. Marx.

3 Q And do you recall that this is Dr. Ugone's graphic  
4 representation of the confidence intervals?

5 A I do recall.

6 Q Okay. And you may -- or Dr. Raiff may have disagreed with  
7 exactly how broad it was, but is it fair to say that with  
8 respect to pMDI, we see that the error band or the confidence  
9 intervals include both the blue line actual price, and the red  
10 dashed line, the but-for price. Correct?

11 A The disagreement goes well beyond whether that is too wide  
12 or not. It's not correctly calculated --

13 Q Well --

14 A -- again, and it doesn't make any sense.

15 Q Again, all I'm asking you is: The disagreement about how  
16 to calculate it I recognize. What I'm getting at is, that if  
17 the confidence intervals include both lines? Then the --  
18 include both lines. Then statistics at 95 percent confidence  
19 says that there's no statistical difference between the two.  
20 Correct?

21 A This doesn't make sense the way it's portrayed. And the  
22 easiest way to see that is that this is making it look like the  
23 urethanes price, the price for pMDI could be way at the bottom  
24 of the pink area down at \$.20 one month and then the next month  
25 be up at \$.90, and then the next month it could come back down.

1 It just -- it doesn't make sense for what we know about the  
2 industry. It's not the right way to capture statistical  
3 significance here, and it wasn't done correctly.

4 Q Well, but, Dr. Marx, what this graphic shows and what I  
5 want to get at is that the actual data that we have relating to  
6 these curves is not just the single line that's shown here for  
7 but-for. Correct?

8 A There is only one but-for line.

9 Q I know that. But the data -- there are data points  
10 relating to actual prices that are -- that include -- that are  
11 much more widely dispersed. This is simply a point estimate.  
12 Correct?

13 A The but-for price is a point and the blue line is the  
14 weighted median.

15 Q All right. But the fact of the matter is that there's a  
16 lot of data that ranges both above and below this one line.  
17 Correct?

18 A I don't think that's right. If you look at the volume  
19 weighted transactions --

20 Q Yes.

21 A -- they're pretty tight right around that blue line. I  
22 don't think there's anything down there where you've drawn  
23 that.

24 Q Yes. But the results of the regression model themselves  
25 have dispersion, do they not?

1 A I'm not sure what you mean.

2 Q Both the price line -- the actual price line clearly has  
3 dispersion around it. Correct?

4 A That price line is the weighted median. So there are other  
5 transactions at different prices, but the weight of the volume  
6 of transactions is right around that line.

7 Q Well, I know that's the weight. I'm talking about the  
8 dispersion. Statistical significance also is driven by the  
9 dispersion of the data as opposed to the weight of the data.  
10 Correct?

11 A The dispersion of the data could affect it, yes.

12 Q Okay. And this data, the actual price data is dispersed.  
13 Correct?

14 A If you look at the weighted, volume weighted transactions  
15 there's not a lot of dispersion.

16 Q I didn't ask about volume weighted. I'm just saying -- I  
17 know this is volume weighted. I also know this is the weighted  
18 median average. That's not what I'm asking.

19 A No, it's not weighted median average, it's weighted median.

20 Q I thought I said "median."

21 A You said "weighted median average."

22 Q "Weighted median."

23 A Yes.

24 Q Thank you. I'm only going to get a C minus rather than a  
25 D.

1           So this dispersion means that there is no neat single  
2 relationship between these two lines. Correct? There's  
3 uncertainty associated with the relationship. Correct?

4       A    I'm not sure what you're asking me when you're saying the  
5 relationship between the two lines.

6           The two lines are what they are. The relationship is  
7 the difference between them.

8       Q    Okay. There is uncertainty associated with the model and  
9 there's -- there's uncertainty associated with the model line  
10 itself. Correct?

11      A    It's a prediction so, yes, that's the statistical  
12 uncertainty.

13      Q    Okay. And then if we wanted to express that uncertainty as  
14 a band around the but-for price, it would say that the  
15 uncertainty means that the true answer is somewhere between an  
16 even lower line and a greater overcharge, and a higher line and  
17 a lesser overcharge. Correct?

18      A    You could try to do that, but it wouldn't be that.

19      Q    Let's just work with this just because we're not -- I'm not  
20 going to tackle you, Dr. Marx, with respect to the particulars  
21 of the difference between Dr. Ugone and yourself. I'm going to  
22 use your numbers. Okay?

23           I'm just trying to get to the jury that because  
24 there's uncertainty associated with the model, there's a range  
25 of potential values that all of which could be consistent with



1 the statistical test that's being applied. Correct?

2 A Yes. We know from the fact that the pMDI model has an 80  
3 percent confidence level, that the bands aren't nearly as large  
4 as what you've drawn there.

5 Q Again, I'm just trying to get to the concept. I'm going to  
6 get to the numbers in just a moment.

7 If the confidence interval as the range of uncertainty  
8 includes zero; that is, that there's no overcharge, that would  
9 be said to be statistically -- statistically non significant at  
10 the confidence level that's being chosen. Correct?

11 A Let me just be clear. If you have -- if you're interested  
12 in 95 percent confidence level and you draw a 95 percent  
13 confidence band, and if that includes no overcharges, that's  
14 when you would say that result is not statistically  
15 significant.

16 Q Correct. So if I'm just grossly representing a confidence  
17 band here with respect to MDI, the confidence band includes no  
18 overcharges; that is, it says that the actual overcharge number  
19 here is -- may be -- may be within confidence intervals the  
20 same as the actual number, then that would say that those  
21 confidence levels, there's no statistically significant  
22 difference. Correct?

23 A Okay. I don't agree that that's what the confidence band  
24 looks like. But if that was the confidence band for that month  
25 the way that you've drawn it, you would say that it's not --

1 the overcharge in that month is not statistically significant.

2 Q Now let's talk about MDI. Very specific.

3 With respect to MDI, you said that if 95 percent  
4 confidence -- at 95 percent confidence interval the -- it's  
5 around here some place -- at 95 percent confidence interval,  
6 this is not a statistically significant difference; that is,  
7 for MDI. Correct?

8 A Now you're comparing apples and oranges here. Because what  
9 I was talking about was looking at the overcharges as a whole.  
10 And you can say that with 80 percent confidence for MDI, the  
11 overcharge -- there really was an effective conspiracy, that  
12 the actual prices were above what would have been predicted in  
13 the absence of the conspiracy.

14 Q Okay. So if we're just working with the -- you tell me  
15 what the number is for that pMDI. So in the industry model, at  
16 95 percent, at what level -- is this significant, is the  
17 difference significant or not at 95 percent confidence --

18 A Not at 95.

19 Q What?

20 A No not at 95. PMDI is significant at 80 percent.

21 Q That's what I thought.

22 A Yeah.

23 Q Okay. So if you're using a 95 percent confidence interval,  
24 the variance for MDI is not significant statistically.

25 Correct? Right?

1 A The overcharge as a whole -- you've kind of written it  
2 above the bar for the single month so it's not the right way to  
3 think about it. But when you look at the overcharge as a  
4 whole, for MDI it's only statistically significant at the 80  
5 percent level, not 95.

6 Q Right. Okay. So that's fair because I'm kind of  
7 pinpointing something.

8 So if we take the period of time as a whole -- right?

9 A Yes.

10 Q -- then the overcharge, the variance here, the overcharge  
11 for pMDI is not statistically significant. Fair?

12 A At the 95 percent level.

13 Q At the 95 --

14 A Right.

15 Q In fact, you would have to go down to 80 percent for it to  
16 be significant. Correct?

17 A That's right.

18 Q Okay. So if you go to 80 percent it becomes statistically  
19 significant.

20 Now, my question is this: Isn't it true that the 95  
21 percent confidence test is the typical test that's used in  
22 scientific studies?

23 A I think -- I don't know about all scientific studies, but  
24 in economics I think of it as being the most common.

25 Q The most common.

1           Now, have you ever published a paper -- first of all  
2     let me ask: When you come in to testify as an expert in court,  
3     do you follow the rules that apply to your work as a professor;  
4     that is, you know, the scientific rules and principles that  
5     apply to your work as a professor, or do you have a different  
6     set of rules that you use in court?

7     A    I think of myself as using the same rules.

8     Q    Okay. And so the question is -- I guess I have is: Would  
9     you ever -- have you ever published a paper on economics in  
10    your field that uses an 80 percent confidence interval?

11    A    I have papers where I just state the confidence level  
12    sometimes referred to as the P value. So instead of declaring  
13    it to be statistically significant or not, I just say the  
14    confidence level is 80 percent.

15    Q    Is 80 percent. So you have published peer review papers  
16    where in your research you use an 80 percent confidence  
17    interval?

18    A    No. No, it's not that I would calculate an 80 percent  
19    confidence interval. I would just report in my work what the  
20    confidence levels were, just like I had on the screen here --

21    Q    Okay.

22    A    -- where I had the 99, 92 and the 80.

23    Q    Sure.

24    A    So I would just -- one way to approach this is to tell your  
25    reader, look, it was statistically significant or not, and then

1     you're telling your reader it was above whatever you specify,  
2     above 95 or below 95. The other way to approach it is just to  
3     tell your reader in the published work what the confidence  
4     levels were. And I've done that in my published research.

5     Q    Okay. So now the question is this: Have you ever  
6     published a peer review paper where at 80 percent confidence  
7     you have said this is statistically significant?

8     A    No, I don't think so.

9     Q    Okay. Are you aware of anybody else in your field who has  
10    published a peer-reviewed paper that at 80 percent says the  
11    result is statistically significant?

12    A    I know there are papers that sometimes do use 80 percent  
13    and they'll say -- they'll say it's statistically significant  
14    at that 80 percent level.

15                 It's true that 95 would be the most common threshold  
16    to apply, but there are papers that go down as low as 80.  
17    Mostly, the most information would be provided just by telling  
18    a reader what the confidence level is and then they can make a  
19    judgment about whether it's high enough for their purposes.

20    Q    Would you say here in this court that 80 percent is  
21    statistically significant or not?

22    A    Well, it's not a matter of 80 percent being statistically  
23    significant, the results are statistically significant at the  
24    80 percent level.

25    Q    Yes. But would you say that that's an appropriate standard

1 to use for statistical significance in this case?

2 A Absolutely, given all the analysis that I have done and the  
3 evidence that I have seen, I'm perfectly comfortable with the  
4 80 percent level.

5 Q Are you familiar with --

6 MR. MARTIN: Your Honor, could she just finish her  
7 answer?

8 THE COURT: I'm sorry?

9 MR. MARTIN: Could she finish her answer?

10 THE COURT: I think she finished her answer.

11 MR. MARTIN: Yeah.

12 Q So I guess we're not totally communicating because I  
13 misunderstood your prior testimony.

14 Are you -- have you published any paper where you used  
15 data and report results where you have used a confidence  
16 interval at the 80 percent level? Have you?

17 A Have I produced a confidence interval -- no, I don't think  
18 I would have produced an 80 percent confidence interval.  
19 Probably not.

20 Q You wouldn't have published it. Right?

21 A I don't think I would have -- it would be unusual to  
22 produce an 80 percent confidence interval. If you're going to  
23 produce the confidential interval you would usually use 95  
24 percent. I mean, the standard -- if you tell someone in the  
25 literature, look, this is the confidence interval, they're

1 going to assume that what you've done is you've produced the 95  
2 percent confidence level. It's the most common level to use.

3 So I don't -- I don't think I would have  
4 constructed -- I guess I might have, but I don't think -- I  
5 don't think in my research I've ever constructed for  
6 publication an 80 percent confidence interval.

7 Q That's my question: Have you ever for research purposes  
8 constructed a confidence interval and published it at 80  
9 percent?

10 A Not that I recall. It would be unusual to do a confidence  
11 interval at that level. It would be perfectly typical to  
12 announce your confidence levels and type 80 percent to be  
13 there. But to actually construct an 80 percent confidence  
14 level I think would be a little bit unusual. I don't think  
15 I've done it.

16 Q And again, let's take just your faculty at Duke. Are you  
17 aware of anybody in the economics department that has done  
18 that?

19 A Constructed an 80 percent confidence interval?

20 Q Right.

21 A That seems like it would be kind of unusual. At the level  
22 of doing that I think you would just report the confidence  
23 levels.

24 Q Let's talk about the next board, and it will be pretty fast  
25 because I think it's the same.

1 MR. MARTIN: Your Honor, could I just give her a laser  
2 pointer in case she needs it?

3 THE COURT: Sure.

4 Q Let's talk about the CFS polyols.

5 I'm not going to put it up here. Are these  
6 statistically significant at 95 percent confidence interval?

7 A No. 92 percent for those.

8 Q Let's talk about TDI. I want to ask you a different series  
9 of questions with respect to TDI.

10 I want to talk about business conditions. You're  
11 familiar, are you not, with the trade press in the urethanes  
12 business?

13 A Yes.

14 Q Things like Chemical Weekly and things of that nature?

15 A Yes.

16 Q Okay. And are you familiar that there are witnesses in  
17 this case who have testified as business people to the business  
18 conditions that existed at various points in time throughout  
19 the 10 years of TDI?

20 A Yes.

21 Q Okay. Whose testimony are you familiar with?

22 A I've read all of the parts of these depositions that were  
23 cited at the various reports, some of the same people that  
24 you've seen here, Mr. Dhanis, Mr. Pauley, I saw the testimony  
25 of Mr. Underdown, Mr. Ho. I don't have in my memory a full



1 list of --

2 Q I'll be sure not to tax you too much, it's probably better  
3 than mine.

4 But you're familiar, are you not, with the fact that  
5 according to, for example, Mr. Ho and the trade press at the  
6 time, and I think Mr. Pauley as well, but it's their view and  
7 the trade press reflects that under this period of 1994 to  
8 1996, during this period of time there was a strong demand for  
9 TDI. Are you familiar with that?

10 A Actually demand for the industrial production indices that  
11 I look at and as far as I know, it was going down in 95.

12 Q No, you're looking at auto. I'm talking about the demand  
13 for TDI.

14 A Yes, the demand for TDI would be driven by automobile  
15 assemblies and things like the carpet and furniture production,  
16 and those are going down in '95.

17 Q That's now talking about the model and what you looked at,  
18 that's my whole point.

19 A I sure looked at that data, that's in the model.

20 Q I understand that. I'm asking you a different question.  
21 I'm asking for what the people who were in the business at the  
22 time were observing with respect to the demands for their  
23 particular products. Okay? You can talk about consumer demand  
24 for autos and carpets and all the rest of that. But the people  
25 who are the business people that are selling the polyurethanes,

1 they have the opportunity to take a look at the demand for  
2 their product. Correct?

3 A This is the demand for their products.

4 The reason I'm using autos is automobile assemblies.  
5 So every time you make a car you've got to use these products  
6 in the car. So more building of automobiles is demand for TDI;  
7 and similarly, more production of carpets and furniture is more  
8 demand for TDI. So I am capturing the demand for this product.

9 Q But the product that is being bought when they buy  
10 polyurethanes is not automobiles or carpeting, the product  
11 that's being bought is the polyurethane materials that are  
12 being sold that ultimately will be used in the cars and the  
13 carpeting. So when I'm asking about demand, I'm asking for the  
14 immediate demand for the stuff that's going out the door at the  
15 factory, which is the chemical. That demand.

16 A I think it's the same thing though. Because --

17 Q Well, that's my real question to you. Okay? My real  
18 question to you is: The business people at this point in time,  
19 they're getting the orders for the rail cars that go out the  
20 door with their product. They see it because a customer calls  
21 up and says: I want four tank cars. And they write down "four  
22 tank cars." And the customer -- the sellers and the customers  
23 are reporting in the trade press and in their sworn testimony  
24 that you've read that there was strong demand for those tank  
25 cars during this period of time.

1           You've read that, haven't you?

2       A    I don't recall specifically right now, but I do know that  
3       the data showed declining demand for auto assemblies and carpet  
4       production, carpet and furniture production in 1995.

5       Q    How many hands does -- you've got the chemical that's in  
6       the little tank car. Okay? And it goes into a factory that  
7       makes foam. And then the foam is sold to -- for use in beds  
8       and use in cars, and people who are the consumers for beds and  
9       cars, they make a demand that could well be felt all the way  
10      back here. I understand --

11           MR. MARTIN: Your Honor, this is testifying.

12           THE COURT: No, he's not. Okay.

13           I think that's what you understand too, Dr. Marx.  
14      Correct?

15           THE WITNESS: It is.

16           THE COURT: That's what she's been saying. There's a  
17      demand, and the auto market dropped off during that period of  
18      time.

19           MR. BERNICK: Right.

20      BY MR. BERNICK:

21      Q    So the question though is: You're talking about the demand  
22      that's in your model. The demand in your model is demand for  
23      cars and beds. Correct?

24      A    I mean, that's a little bit shorthand. It's the carpet and  
25      furniture, industrial production index. There's housing

1 starts. We're talking about TDI, there's the automobile  
2 assemblies for MDI, there's appliance and carpeting and  
3 furniture production.

4 Q Those are all demand indices for the ultimate consumer.  
5 Right?

6 A Those are measures of production of those things, of the  
7 cars and the carpeting and furniture.

8 Q So, the business people over here who are at the chemical  
9 companies selling the stuff in the rail cars, they record the  
10 demand by the people here, like the plaintiffs in this case,  
11 for those rail cars. They see that demand. Correct?

12 A They see the orders, yes.

13 Q Okay. And so these people here are saying: My orders are  
14 going up.

15 Are you saying that they're wrong? Is the model  
16 saying that they're wrong?

17 A I'm just saying that in the data, demand, the demand  
18 variables which I think are appropriate demand variables and  
19 which your economists have not objected to as appropriate  
20 demand variables, I think they're capturing the demand, and  
21 they're going down in 1995.

22 Q Well, just focus on my question. I'm asking you a very  
23 narrow question. I know what your model does, I know what the  
24 experts have said about it. I'm asking about the business  
25 people who are the ones who are reporting strong demand and

1 strong prices, that's who I'm talking about.

2 Forget about the model for a minute. I'm going to ask  
3 you about the model. Okay? Just -- I just want to know about  
4 the demand.

5 Are you saying that the people who are in the business  
6 and who are quoted in the trade press were simply wrong when  
7 they said that the demand for the tank cars was going up? Are  
8 you saying that they're wrong?

9 A I'm not sure exactly which testimony you're pointing to  
10 that's saying specifically the demand was strong in 1995.

11 Q Mr. Ho is a good example.

12 A If there was someone that was saying that demand was going  
13 up in 1995, I would wonder if they were misremembering what was  
14 happening in that period of time. Because when you look at the  
15 data on auto assemblies, for example, and the production of  
16 these products that include flexible foam, it's going down in  
17 1995.

18 Q Chemical Week, 1995: Urethanes looking strong. Talking  
19 about the expansion of facilities to make enough urethanes, TDI  
20 to go around. It's in the trade press.

21 A I don't know what you're looking at up there.

22 Q Well, did you look at the trade press to see what kind of  
23 demand was being reported for polyurethanes during this period  
24 of time?

25 A I looked at the trade press. It's often quite vague as to

1       whatever -- which product they're talking about, which period  
2       of time.

3       Q     Not only does it report strong demand, isn't it a fact that  
4       capacity is being built during this period of time? Hundreds  
5       of millions of dollars being spent to build TDI capacity to  
6       serve that demand during that period of time?

7       A     The increase in -- it's kind of a slow, small increasing  
8       capacity through 1997, and then a larger increase in capacity  
9       in 1998.

10      Q     Right. In fact, throughout this period of time, because of  
11      the report that the demand is strong, the industry starts  
12      de-bottlenecking and then builds over a period of years a  
13      substantial amount of capacity that starts to come on stream  
14      roughly about there. Right?

15      A     Yeah. From my recollection, the big increase in capacity  
16      comes in 1998.

17      Q     Right. Dow's plant came on stream in 1998. Right?

18      A     I think that's right.

19      Q     And isn't it a fact, Mr. Ho testifies that the reason that  
20      the company spent hundreds of millions of dollars to build all  
21      these new factories, it took three years, is precisely because  
22      of the strong demand and the tight capacity that existed back  
23      here in 1994 and 1995? Isn't that what he says?

24               MR. MARTIN: Your Honor, Mr. Ho hasn't testified in  
25      this case yet.

1 MR. BERNICK: She just said she reviewed his  
2 testimony.

3 THE COURT: No, I'll object -- I'll sustain the  
4 objection. Rephrase the question. Or if you can, I don't know  
5 if -- I don't know if she even has the basis of that witness.

6 MR. BERNICK: I think she mentioned Mr. Ho  
7 specifically.

8 THE COURT: Go ahead. Reask the question.

9 MR. BERNICK: That's okay.

10 BY MR. BERNICK:

11 Q So, the business people are building capacity, not because  
12 they think it won't be used, because demand is going down;  
13 they're building capacity because they think it will be used  
14 because demand is going up. That's what they're saying.  
15 Right?

16 A You're asking me what the business people --

17 Q Yes, yes.

18 A Are you talking about Mr. Ho specifically?

19 I don't have a strong recollection of what he said in  
20 his deposition.

21 Q That's what the trade press is saying too. That's what the  
22 capacity figures -- you know the capacity figures in the mid  
23 '90s. Right?

24 MR. MARTIN: Your Honor --

25 A Look, the capacity is pretty close to total production in

1 '96 and '97, so you would expect given that capacity you might  
2 expect prices to be going up. But oddly the actual prices are  
3 going down in that period of time.

4 When you get to 1998 and there's a big expansion in  
5 capacity, and you look what happens to actual prices, with the  
6 big capacity expansion in 1998, the economics might suggest  
7 prices would go down, but instead that's where you see that  
8 kind of hump in the prices, in the actual prices.

9 Q We'll get to '98 if we get past '94 and '95.

10 Can you say -- can you say that what is reported in  
11 the trade press and in the depositions, which is that the  
12 reason --

13 MR. MARTIN: Your Honor, these questions are without  
14 foundation. He's just telling people what's in the trade  
15 press.

16 THE COURT: You have to lay a better foundation. When  
17 you say "the trade press," I don't know which one you're  
18 referring to.

19 MR. BERNICK: We'll show the witness Exhibit DX-6828.

20 MR. MARTIN: Is this in evidence?

21 MR. BERNICK: Pre-admitted.

22 MR. MARTIN: May we talk at sidebar, please?

23 THE COURT: Well, is this pre-admitted?

24 MR. BERNICK: It is pre-admitted.

25 Your Honor, I really would like to keep on going here



1 because I know it's getting late.

2 THE COURT: We don't need a sidebar right now.

3 MR. MARTIN: Fine, fine.

4 THE COURT: But if you're going to refer to a trade  
5 journal, then show it to her and ask her if she's familiar with  
6 it. If she's not, then there's no foundation.

7 BY MR. BERNICK:

8 Q 6828, Defendant's Exhibit. Just take a time to read it,  
9 Dr. Marx.

10 A It's going to take me a minute to read this.

11 THE COURT: Do you need to read it?

12 THE WITNESS: Yes. I don't just recognize it.

13 THE COURT: Just take a few moments to read it and see  
14 if you recognize it.

15 (There is a pause for the witness.)

16 A I don't specifically recognize it. I can see it says  
17 they're looking for good growth into the next century. It's  
18 dated toward the end of 1995.

19 Q Have you read the second page?

20 A I have not.

21 This isn't the best setting for me to concentrate and  
22 read carefully what's here. But would you like me to try to  
23 read carefully the second page?

24 Q Well, what I really would like is to ask you a question and  
25 I'll try to frame it so that we don't get bogged down and we

1 can move along.

2 Business people are reporting -- I want you to assume  
3 for purposes of my question, just assume it -- you're an  
4 expert, you can be asked hypotheticals -- I want you to assume  
5 for purposes of my question that both the trade press and the  
6 testimony of business people will be that there was strong  
7 demand --

8 THE COURT: Is there going to be evidence to this  
9 effect?

10 MR. BERNICK: Yes, absolutely.

11 A This doesn't say anything about 1994 or most of 1995, so  
12 don't rely on this to put that strong demand right there in  
13 '94, '95.

14 Q It is a 1994 and 1995 trade journal. Correct?

15 A No, it's dated October 4th, 1995.

16 Q Okay. So 1995 --

17 A It's looking forward past that point.

18 Q But it's talking about what the business condition have  
19 been.

20 A That's not how I read it. It looks like it's looking  
21 forward to me.

22 THE COURT: Just a moment, gentlemen.

23 You're going to have to lay -- if you're going to ask  
24 her questions about particular journals or particular  
25 depositions you're going to have to lay a better foundation.

1           Are you making a representation to me that there's  
2       going to be evidence of a strong demand in that period of time?

3           MR. BERNICK: That's absolutely correct.

4           THE COURT: You're making that representation?

5           MR. BERNICK: Yes.

6           THE COURT: Assuming there's that evidence; now what?  
7       Go ahead.

8       BY MR. BERNICK:

9       Q    So my question is: Assuming that the business people are  
10      reporting strong demand and as a result are opening up,  
11      creating new capacity. I want you to assume that for purposes  
12      of my question. Okay?

13      A    I'm assuming that there's new capacity?

14                I mean, I've looked at the capacity numbers. There's  
15      not big expansion in capacity then.

16      Q    That's not really what I said. I said, I want you to  
17      assume that there's strong demand and that's the reason why  
18      people are building the new capacity. Okay?

19      A    Okay.

20      Q    And that as a result, they say that capacity -- during this  
21      period capacity is tight. Capacity being "tight," do you know  
22      what that means?

23      A    I don't know what you mean.

24      Q    Okay. Well, I'll tell you what I mean so it's clear. That  
25      given the size of the factories at that point in time, the

1 demand is high enough that they're operating at very high  
2 rates. Okay?

3 A Okay.

4 Q Okay. So, and they will say that's the reason why actual  
5 prices were rising. I want you to assume that. Okay? At  
6 least for my client. I'll be producing Mr. -- we'll be  
7 producing Mr. Ho.

8 Okay. At that same time we can see that your model,  
9 or Dr. Raiff's model is indicating that prices should be going  
10 in exactly the opposite direction. Correct?

11 A The prices in the but-for look pretty flat. You seem to  
12 have drawn a downward slipping line through them. And my  
13 recollection of the capacity is that capacity does not get  
14 particularly tight until 1996 and 1997, which is exactly what  
15 the but-for model predicts prices going up, consistent with the  
16 capacity, and where the actual prices are coming down is  
17 inconsistent with your representation of what's going on here.

18 Q We're saying that the evidence will show this.

19 My question to you is very simple. Isn't it a fact  
20 that there's nowhere in your report, whatever these -- whatever  
21 the facts might be with respect to business conditions -- I've  
22 told you what our witness, I believe our witness in good faith  
23 is going to say -- but isn't it a fact that in your report you  
24 never actually analyzed how it can be that prices are going in  
25 one direction, whereas your model is saying or going in a

1 different direction?

2 A Because there's a conspiracy to elevate prices.

3 Q No, your report never says that. Correct?

4 A I attribute the difference between the actual prices and  
5 the but-for prices to the conspiracy.

6 Q That is in the aggregate. I don't see anything in your  
7 report where you take and focus on periods of time where the  
8 model is out of sync with the prices in this way and ask the  
9 question why. I don't see -- I don't see any of it in your  
10 report. Am I wrong?

11 A What do you mean "out of sync"? You mean the conspiracy  
12 was effective?

13 Q No.

14 With due respect, Dr. Marx, I'm asking a very simple  
15 question. You're saying the reason is the conspiracy. I  
16 understand you have that view.

17 I'm asking a factual question: In your report, do you  
18 anywhere analyze how it can be that when your model is  
19 predicting that prices should go down, prices are, in fact,  
20 going the other way -- at a time? Do we find that in your  
21 report?

22 A Yes. I talk about it in the report how the result of my  
23 model are consistent with a conspiracy to elevate prices.

24 Q I'm talking right here, right where the business is taking  
25 place. Your model says one thing, the prices say another. I'm

1 just asking you: Is that something, this period of time, '94  
2 to '96, is that something that is addressed at all in your  
3 report?

4 MR. MARTIN: This is asked and answered three times.

5 THE COURT: It's been asked and answered several  
6 times, so sustained.

7 MR. BERNICK: I don't think -- okay, I'm not going to  
8 argue with you.

9 THE COURT: She's answered it, that it's a result of  
10 the model versus the actual prices.

11 MR. BERNICK: No, my question really is the why for  
12 this period of time.

13 Q Let me just ask you this:

14 During this period of time prices are coming down on  
15 the actual prices, and there's a trend going up the other way  
16 for the but-for prices --

17 A The but-for prices there make perfect sense to me given how  
18 tight the capacity was in '96 and '97.

19 Q I'm not done with the question, Dr. Marx.

20 THE COURT: That's okay. The answer stands. The  
21 answer stands.

22 MR. BERNICK: Okay.

23 Q So now we see it going down again, and price is coming down  
24 but not so much. Right?

25 A Overall, yes.

1 Q Right. Again, does your report deal with the difference  
2 between these trends, or any other trends along this line,  
3 specific variances? Does your report address the historical  
4 circumstances surrounding specific variances?

5 A I looked in great detail at the cost and demand factors and  
6 how they evolved over time, and I find the but-for line to be  
7 consistent with what I know about capacity, demand, other  
8 things going on, but I attribute that difference to the  
9 conspiracy as a whole.

10 Q I'm going to show you -- I'm going to ask you this  
11 question: Isn't it a fact that during your -- the examination  
12 before the Court about a month ago, you were asked  
13 specifically: (Reading) Why it is that your model price is  
14 going down and the prices are going up?

15 Do you recall that?

16 MR. MARTIN: What page?

17 MR. BERNICK: Page 174.

18 A Not specifically.

19 Okay, I'm on page 174.

20 Q Right. Do you recall having a discussion before the Court  
21 at that point in time about why it was that the price trends  
22 were different?

23 A Not specifically -- I don't specifically recall it but I  
24 can see it here in the transcript.

25 Q Okay. So my question is: Isn't it a fact that during

1 that, even a few weeks ago you were not in a position to  
2 explain why these trends were going in a different direction?

3 A Again, I say here: "I've spent a long time studying supply  
4 and demand and capacity in this case in all these periods of  
5 times."

6 It's a sensible price pack to me given the analysis  
7 I've done, the study I've done of the supply and demand  
8 variables in this case given the evidence that I've seen. I  
9 attribute the gap between the actual prices and the predictive  
10 prices to the conspiracy.

11 Q Where did you attribute this particular gap in your report?

12 A I didn't make an attempt in my report to attribute  
13 differences in the overcharges in any different months to any  
14 specific acts or specific changes, I looked at the model as a  
15 whole and attribute the overcharges as a whole to the  
16 conspiracy.

17 Q That is exactly why I'm going down this road.

18 This distance between these two lines depends on  
19 one-by-one-by-one transactions taking place where the price  
20 being charged is different from your but-for price. Correct?  
21 The total aggregate overcharge is a function of what is  
22 happening at each and every different one of these points.  
23 Correct?

24 A I'm adding up the overcharges on a  
25 transaction-by-transaction basis, yes.



1 Q And at the same time, isn't it true that in your report you  
2 never analyzed the facts on the ground, the business facts on  
3 the ground as this process unfolds? In your report you don't  
4 analyze exactly what is happening with the business people for  
5 polyurethanes during these different periods of time?

6 A That's wrong.

7 Q That's wrong.

8 So can you tell me exactly what was happening in 1997  
9 when these two curves diverged?

10 A I would like to discuss the evidence that I've seen in that  
11 period of time. I'm not sure that I'm allowed to in front of  
12 this Court.

13 THE COURT: Okay.

14 Q I'm asking you about the business facts on the ground. Do  
15 you --

16 A These are interviews with business people.

17 Q I'm talking about business people doing business, not  
18 business --

19 A My business people were doing business.

20 MR. MARTIN: Your Honor --

21 MR. BERNICK: I'll skip on.

22 THE COURT: Move on.

23 Q This variance that takes place here, that's what it is, a  
24 variance or a gap. Right?

25 A I think of it as overcharges.

1 Q The overcharges come out of the other model. Right? This  
2 is just the industry model.

3 A It's the industry model, yes.

4 Q It's a variance or a gap. Right?

5 A I think of it as the measure of overcharges.

6 Q Isn't it true that your model doesn't tell us, doesn't tell  
7 us the cause of that variance?

8 A I attribute the variance, the gap, the overcharges to the  
9 conspiracy.

10 Q The model does not tell cause (writing on chart).  
11 Right?

12 A I mean, it's not quite right. What it tells you is that  
13 there is something different about the competitive process that  
14 caused the prices to be higher than they otherwise would have  
15 been. And then what is it that caused the competitive process  
16 to be different in a way that elevated the prices?

17 To me the reason that fits is the conspiracy.

18 MR. BERNICK: Your Honor, I'd like to show the witness  
19 page 128 of her examination during the hearing that took place  
20 before the Court at line 9. This is a few weeks ago.

21 Q Do you recall the question as follows:

22 (Reading) Now, isn't it true that the model does not  
23 determine the cause, what it is that caused the variance? The  
24 model itself does not determine the cause of the variance?

25 And your answer was, "That's correct."

1           Do you recall giving that answer under oath at that  
2     time?

3     A     I agree with it.

4           I don't specifically recall. I mean, I agree that  
5     that's what I said.

6     Q     And did I get this down right: The model does not tell the  
7     cause of this variance? Did I get that right? That's what you  
8     said. Right?

9     A     It tells you that there is -- the model tells you that  
10    there's something different about the competitive process in a  
11    way that caused prices to be higher than they otherwise would  
12    have been, but what that thing was that caused prices to be  
13    higher than they otherwise would have been, the model doesn't  
14    tell you what that was.

15    Q     The model doesn't tell you, for example, that the cause of  
16    the variance is a conspiracy, does it?

17    A     That's correct, that's my inference.

18    Q     So, and I'm going to put -- talk a little bit about that  
19    inference in a minute. But so we get back to it, the model  
20    that you have done or that you have endorsed for purposes of  
21    this case -- it's around here someplace -- the model is the  
22    heart of your work in this case. True?

23    A     I think we already had that question. Yes.

24    Q     I'm getting back.

25           And if we take a look at the model, the model shows

1       that there is a variance, but the model is not designed to tell  
2       you the cause of the variance, including whether conspiracy is  
3       the cause of the variance. Fair?

4       A    Again, it tells you that something has changed about the  
5       competitive process in a particular way, in a way that caused  
6       prices to be higher than they otherwise would have been, but it  
7       can't tell you what that was.

8       Q    Now, so in order to find out, in order to go to what you've  
9       talked about, which is you attribute the variance to evidence  
10      of the conspiracy as a whole -- right? Did I get that right?

11      A    I attribute it to the conspiracy as whole. I don't  
12      attribute it to the evidence.

13      Q    I could show you.

14               Do you not recall testifying repeatedly that you  
15      attribute the variance to evidence of the conspiracy as a  
16      whole?

17      A    No, I don't recall. What I mean is, I attribute it to the  
18      conspiracy as a whole.

19      Q    But you don't have an opinion in this case as to whether  
20      there's a conspiracy to begin with. Right?

21      A    I'm going from the assumption -- doing this work on the  
22      assumption that the jury will find that there was a conspiracy,  
23      and to me, when I see a change in the competitive process that  
24      causes the prices to be higher, I've looked at all of the other  
25      causes that have been raised as a possibility, and none of them

1 hold water. The thing that fits as an explanation is the  
2 conspiracy.

3 Q You started out with the direction to assume that there was  
4 a conspiracy. Correct?

5 A Yes.

6 Q During the course of your work, you didn't do the work that  
7 was necessary, that would have been necessary to reach an  
8 opinion regarding whether the conspiracy did, in fact, exist.  
9 True?

10 A I don't have an expert opinion to present to the jury about  
11 whether there was a conspiracy.

12 Q If you don't have the expert opinion to present to the jury  
13 that there was the conspiracy, how can you say that the  
14 variance was caused by the conspiracy that you don't know  
15 exists?

16 A In looking at the difference, I've looked at a lot -- done  
17 a lot of analysis, looked at a lot of evidence, and through  
18 that I'm able to attribute this difference I see to the alleged  
19 conspiracy, which I'm working under the assumption that the  
20 jury will find sufficient evidence to conclude that conspiracy  
21 existed.

22 Q So do you have an opinion that there's a conspiracy, or do  
23 you not have an opinion that there's a conspiracy?

24 A I have a personal opinion that there was a conspiracy. I  
25 haven't done the kind of work required to present an expert

1 opinion and analysis to the jury about it.

2 Q I see. So are you here to testify to your personal views  
3 or your views as an expert?

4 A I'm here as an expert.

5 Q And as an expert, can you tell this jury that you have  
6 found that there's a conspiracy?

7 A No.

8 Q If you haven't found there's a conspiracy you can't very  
9 well say the conspiracy caused the variance, can you?

10 A I attribute the difference, the overcharges there to the  
11 conspiracy.

12 Q I don't know if that's an answer to my question.

13 Can you say the conspiracy caused the variance? Or  
14 can you not because you don't have an opinion that there is a  
15 conspiracy?

16 A Again, saying that it caused it is stronger than what I'm  
17 prepared to say, because the model -- in theory there could be  
18 something else that caused the competitive process to change in  
19 a way that elevates the prices. I don't know what that would  
20 be. To me, the logical explanation is that there was a  
21 conspiracy.

22 Q So we're clear: Where you are today, to say "cause" is too  
23 strong. Right? That's just what you said.

24 A Yes.

25 Q So you say: "I attribute, but I can't say 'cause'?"

1 A Yes.

2 Q Doesn't "attribute" mean "cause"?

3 A To me, if I were going to present an opinion to the jury  
4 that says: "I know there's a conspiracy and it caused this  
5 difference," I think I would need to do some more digging and  
6 more analysis. But given the work that I've done and the  
7 evidence that I've seen, I'm happy to say that when you ask me  
8 why, you know, why do you think that gap is there, I think the  
9 logical explanation is the conspiracy.

10 Q "Happy to say."

11 So in a case where the plaintiffs are seeking \$600  
12 million on the basis of the model that you've endorsed, you are  
13 happy to say that you can attribute the variance and the  
14 damages to evidence of a conspiracy, even though you can't use  
15 so strong a word as "cause." Is that your testimony?

16 MR. MARTIN: Your Honor, the phrase "cause" is a legal  
17 opinion. I assume he's asking it in some other kind of a way.

18 MR. BERNICK: It just --

19 THE COURT: Okay, okay. I'll see you at sidebar.

20 (At the sidebar.)

21 THE COURT: Who has her report?

22 THE LAW CLERK: I have it. These are the Raiff  
23 reports and Dr. Marx.

24 THE COURT: Hold it there.

25 THE LAW CLERK: Sure.

1 (The Court confers with the Law Clerk off the record.)

2 MR. JOHNSON: I think Mr. Martin went to get it for  
3 you.

4 THE COURT: That part of her report where she opines  
5 on the actual word she used. It's come up early in his  
6 examination, your examination.

7 (Mr. Martin steps away from sidebar, and returns.)

8 THE COURT: Somebody had it highlighted.

9 MR. MARTIN: Are you looking for effective conspiracy  
10 language?

11 MR. BERNICK: Statistical significance.

12 THE COURT: Along the line of what he's examining her  
13 on. And she made an opinion and the actual language in that  
14 was... We had it here a couple of hours ago, I know that. I  
15 looked at it. We were referring to it back then.

16 MR. JOHNSON: You showed it to the Court, Jim.

17 MR. MARTIN: Yes, I know.

18 MR. BERNICK: Your Honor, I'm prepared in order to  
19 move on to get to the next step.

20 THE COURT: No.

21 MR. BERNICK: Yeah.

22 THE COURT: Well, this is her language. Right?

23 "These low probabilities are evidence that there was an  
24 effective conspiracy that caused plaintiffs' economic harm in  
25 the amounts estimated by my models."



1           Now, whether that means there was a conspiracy --  
2       look, I assume you're going to cross or redirect her having  
3       looked at a number of things, depositions, all the data.

4           MR. MARTIN: The problem we're now entering --

5           THE COURT: Go ahead.

6           MR. MARTIN: -- is that once again so much of what she  
7       relied on was the Proger information, and this is the  
8       information she alluded to --

9           THE COURT: The Bayer information?

10          MR. MARTIN: The Bayer information. Which was the  
11       starting point for evaluating all of the other evidence. I  
12       mean, there was a fact-intensive analysis to see was there --

13          THE COURT: She also read depositions of Stephanie  
14       Barbour, Stern.

15          MR. JOHNSON: Sure.

16          THE COURT: I'm assuming.

17          MR. JOHNSON: But she's got --

18          THE COURT: Wait.

19          MR. JOHNSON: We have one of the co-conspirators  
20       coming to her and telling her "We did the investigation" --

21          THE COURT: I know the issue. Go ahead.

22          MR. BERNICK: I just -- I wonder what the objection  
23       is. I mean, this doesn't call for a legal conclusion. She  
24       uses the word as an economist. So I don't think that there's  
25       any proper objection as to whether she can -- she's now made a

1 very important admission, and I don't think that it's up to --  
2 I don't think that it's appropriate now for them to be arguing  
3 that they can rehabilitate her, and they can't rehabilitate  
4 her. She said what she said.

5 THE COURT: Where was that language?

6 Well...

7 MR. BERNICK: She said just.

8 THE COURT: It's your case.

9 On redirect, if you want to bring up that she made  
10 this opinion back -- or this was Dr. Raiff's opinion, right?  
11 But she adopted it.

12 MR. MARTIN: Yeah.

13 THE COURT: Okay. Now we're getting into semantics  
14 whether or not it's cause or effect or --

15 MR. BERNICK: But the semantics makes an enormous  
16 difference.

17 THE COURT: I understand. I'm allowing you to get  
18 night, didn't I? You got into it.

19 MR. BERNICK: Yes.

20 THE COURT: But what you do on redirect with that,  
21 it's up to you, because I remember reading that. Okay.

22 (In open court.)

23 THE COURT: Okay. You can proceed.

24 MR. BERNICK: Thank you.

25 BY MR. BERNICK:

1 Q So, Dr. Marx, as a scientist, I think you were about to  
2 tell us what "attribute" meant that "cause" does not mean.

3 A To me, if I were to say that the conspiracy had caused the  
4 overcharges, to me that's making a statement that -- that I  
5 know, that I have ruled out every possible other thing and that  
6 I'm telling you is a fact that it caused the overcharges.

7 I'm not saying something that strong. I'm saying that  
8 I see the overcharges and I don't have any other explanation.  
9 I've ruled out other possible explanations that have been  
10 proposed, and when I look at what fits as an explanation, the  
11 conspiracy is a fit. So that is the explanation I have  
12 available to me. So I attribute those overcharges to the  
13 conspiracy.

14 Q That's fair enough.

15 So I want to go on from there then to -- you said that  
16 "attribute" means that you have not ruled out other causes, but  
17 conspiracy fits best.

18 I tried to take that down as you said. Is that about  
19 right?

20 A I can rule out all of the causes that have been proposed.  
21 They don't hold water. But in theory there could be something  
22 else that I don't know. But when I look for a fit, the  
23 conspiracy is a fit.

24 Q Okay.

25 THE COURT: You just put down "have not ruled out

1 other causes."

2 MR. BERNICK: Yes, "have not ruled out other causes."

3 Well, she put it the other way around.

4 THE COURT: She said -- well, go --

5 MR. BERNICK: Okay. Have ruled out other causes but  
6 she has not -- I think that she has not ruled out all possible  
7 causes. Whatever it is, there's alternatives out there that  
8 she hasn't been able to eliminate.

9 Whatever she said, she said.

10 THE COURT: I know. But you have -- okay.

11 Q So I want to now ask: Isn't it true that this attribution  
12 I think you said was an inference. Right?

13 A Yes.

14 Q It's not the model? The model doesn't make the  
15 attribution. Right?

16 A That's correct.

17 Q So this inference I think you have referred to as a process  
18 of elimination. Right?

19 A Yes.

20 Q I think most of us know what process of elimination is.

21 Isn't it a fact that if we want to know what  
22 scientific method you followed, what expert method you followed  
23 in making this inference, we wouldn't find a method that's  
24 written down anywhere that describes what you did. Correct?  
25 There's no protocol for the inference that you made. Correct?

1 A I mean, it's exactly the kind of thing that's done all the  
2 time in science. For example, suppose that you have a drug and  
3 you give the medicine to a thousand people and they get better.  
4 Do you know that the drug caused them to get better? No. I  
5 guess in theory it could be something else. But you've ruled  
6 out -- you control for diet and exercise and how old they are,  
7 and you control for those things. And that's the kind of thing  
8 I'm doing here.

9 I have something that tells me that -- the model tells  
10 me that something changed about the competitive process in a  
11 way that caused prices to be higher than they otherwise would  
12 have been. So now I have to look for what the cause is. The  
13 only thing that's been raised that fits those facts is the  
14 conspiracy. So I -- I attribute the overcharges to the  
15 conspiracy.

16 Q But in the case of the drug trial, the drug trial actually  
17 has two groups; one has the drug, one has the placebo, and you  
18 do the trial and watch it happen and it's tested to 95 percent  
19 confidence. Right?

20 A Well, I mean, that's not true of all studies of drugs. But  
21 the benefit of what we have here is we have a control period.  
22 So just like in the controlled studies, we have the benchmark  
23 period, we have the white periods of time. So we have a  
24 control group to tell us what the competitive process would  
25 look like in the absence of the conspiracy, and then we can

1 compare that to actual prices during the conspiracy period.

2 Q Didn't you testify four weeks ago that drug trials have  
3 nothing to do with the work that you've done in this case?

4 A I don't think that a drug trial has much to do with the  
5 urethane chemicals.

6 Q Yes.

7 THE COURT: You brought it up, Mr. Bernick.

8 MR. BERNICK: No, but she brought it up. I didn't  
9 bring it up.

10 THE COURT: Well, okay, but...

11 Q And isn't it true that in a drug trial you actually have  
12 control groups that you treat differently and you do a careful  
13 statistical comparison to 95 percent confidence? Isn't all  
14 that true?

15 A Well, no, it depends on what you're doing. Like I have a  
16 paper published in a medicine journal that looks at a study of  
17 a drug that's given to children, and it's called a pediatric  
18 paralytic, and you give this drug to the really -- it's really  
19 sad -- you give it to the really sick children and it paralyzes  
20 them, which is bad, but it keeps them from pulling out the  
21 tubes and other things that are keeping them alive. And we did  
22 a study of the optimal dosage of these pediatric paralytics.

23 And you're not going to do a controlled study there.

24 You're not going to give children a dangerous drug like that.

25 So sometimes, and often in economics, you just have to

1 work with the data you have. Sometimes you're lucky enough to  
2 be able to do a controlled trial. But we're lucky enough here  
3 to have the control period, at least we have the benchmark  
4 period to look to tell us what the competitive process would  
5 have looked like in the absence of the conspiracy.

6 Q In any drug trial, including the one that you just referred  
7 to, there's a written protocol that's approved by a board of  
8 scientists and it's run on the basis of publishable scientific  
9 standards. Correct? Otherwise it wouldn't be done.

10 A My work is published and it was based on the data from what  
11 had been done --

12 Q Right.

13 A -- not an organized trial, because nobody was go to try  
14 these drugs on these kids.

15 Q And in this case there is no written protocol for your  
16 process of elimination. Correct?

17 A Of course not. We're looking at the actual data for  
18 urethanes.

19 Q I just asked a question, Dr. Marx. There is no written  
20 protocol for your process of elimination. True or not?

21 A Not that I know of.

22 Q If we go to your report we will not find the different  
23 possibilities that you considered and eliminated, will we?

24 A I think you will see that because, for example, it --

25 Q No --

1 THE COURT: Let her answer, please.

2 A It goes through the possibilities that Dow's experts  
3 raised. For example, they raised, they think it's capacity,  
4 maybe it's something else, maybe there's a demand variable  
5 missing, and they have raised various possibilities. And I've  
6 looked at all of those, and none of those explain the  
7 difference.

8 Q Those were just the ones that they raised. I'm talking  
9 about the method that you followed, the protocol that you  
10 followed in order to satisfy yourself that you had considered  
11 alternatives and you had -- and you were able to -- you were  
12 able to determine that they were not good alternatives. We  
13 can't find any methodology that you set out like you would have  
14 if you did the test that you had on children that is set out in  
15 writing exactly what your scientific method was going to be and  
16 the steps that you were going to follow. We don't have that in  
17 this case. Right?

18 A You keep suggesting that I must have had this methodology  
19 written out for the study of pediatric paralytics. We didn't  
20 have that. We were just looking at the data.

21 Q You wrote -- I'm just -- forget about that study. I'm  
22 sorry I went down that road.

23 THE COURT: I think we're going far afield with the  
24 pharmaceutical studies.

25 By the way, wouldn't the benchmark area be comparable



1 to a control in a pharmaceutical setting?

2 THE WITNESS: It plays exactly the same role here,  
3 it's the control group.

4 THE COURT: Okay.

5 MR. BERNICK: Okay. I'm not going to...

6 Q The process of elimination you followed is nowhere set out  
7 in your report as a methodology -- as a methodical process of  
8 thinking about alternatives and eliminating them. True or not?

9 MR. MARTIN: Asked and answered.

10 A I don't think there's a sentence in there that says: What  
11 I'm going to do is look at the possibilities, and if they're  
12 not -- if they don't -- I don't think there's a sentence that  
13 says I'm going to look at all the possibilities and rule out  
14 the ones that don't fit the facts.

15 Q That's what I'm asking.

16 A But it's obvious that that's what I'm doing.

17 But remember when I came into this case, Dr. Raiff had  
18 already done the work and I already had two very long reports  
19 from Dow's experts laying out their thoughts about what might  
20 be the cause. And so I had all of those to look at, so I've  
21 looked at a lot of ideas posed by Dow's experts about what  
22 might be the cause, and none of them do the job.

23 Q I understand that you responded to the experts.

24 But I just hear you say that if we go through all of  
25 your -- all the reports that Dr. Raiff did and your own report,

1 we will never find a section that's called "process of  
2 elimination: Here is how I've concluded that the variance is  
3 attributable to conspiracy." We will not find that section  
4 anywhere. Correct?

5 MR. MARTIN: Objection. Asked and answered.

6 THE COURT: Yeah. One more time, if you can answer  
7 it, go ahead.

8 A There's not a section with that title.

9 Q Okay. And, in fact, will we find a list of all the  
10 alternatives that you've considered anywhere?

11 THE COURT: Sustained.

12 MR. MARTIN: Thank you.

13 THE COURT: It's the same question, Mr. Bernick.

14 MR. BERNICK: Okay.

15 Q So I now want to talk about the -- when is the first time  
16 actually in this case that you've used the words "process of  
17 elimination"?

18 A Gosh, I don't know.

19 Q Do you recall it was when I asked you questions at the end  
20 of a long evening of your deposition as to: If it wasn't in  
21 the model, where was it? And for the first time in the years  
22 of this case you said, "I did a process of elimination"?  
23 Wasn't that the first time?

24 MR. MARTIN: Objection. This is the same territory.

25 A No, I'm sure I said that many times. I mean, not -- not in

1 any way that's recorded in a document. But --

2 Q That's the first time that it's recorded anywhere. Right?

3 A I mean, I would have said -- that is what I was doing, and  
4 I probably used those words, and then when you asked me what I  
5 was doing, I told you that's what I was doing.

6 Q Now, there are things, there are variables that you've  
7 acknowledged are of potential importance that are not in your  
8 model. Correct?

9 A Of potential importance?

10 I've looked at all of the variables that people have  
11 raised as being of potential importance, and they're not of  
12 importance.

13 Q Okay. Well, the negotiation skills of the customers, you  
14 have written extensively that those are important in assessing  
15 competitive conduct. Correct?

16 A Well, I mean, they're part of the process by which the  
17 prices are determined in this market.

18 Q That's right. And if we go to not the final model, the  
19 customer model, but the industry model that produces the  
20 initial variance, the variance from the industry model carries  
21 over to the customer model. Right?

22 A Yes.

23 Q Okay. And in determining whether there is a variance; that  
24 is, this gap, negotiation, power or skills of people like Mr.  
25 Pauley or Mr. Underdown, those -- that is not a variable in

1 your industry model. Correct?

2 A It's not one of the variables, that's correct.

3 Q And so how is it that you eliminated as an alternative -- I  
4 don't see anywhere where you have eliminated as an alternative  
5 explanation for this variance in the industry model where  
6 you've eliminated as an alternative your failure -- Dr. Raiff's  
7 failure to include negotiation skills in the industry model. I  
8 don't see any analysis that you've done of that.

9 Can you point it out to me?

10 A Okay. First, I don't think of it as a failure that there's  
11 not a variable for negotiation skill. I'm not sure what that  
12 would be, so I don't think of that as a failure of the model.

13 Second of all, to the extent that negotiations are  
14 part of forming the prices, I'm looking at the actual prices,  
15 so I'm looking at the -- there are negotiations in the  
16 benchmark period, they are part of the process that determines  
17 the prices, so they are captured in the model.

18 And then as I said in the direct examination, to the  
19 extent that there was something different about the negotiation  
20 skill applied to any individual transaction, maybe they bought  
21 a higher volume so they were able to negotiate a lower price.  
22 That I take into account in the second stage model. We had it  
23 up here. And if there were something different about a  
24 particular transaction, maybe they got it in an especially good  
25 price, I assume that they would have gotten that same

1 especially good price, that same benefit in the but-for world,  
2 but just that the price would have been benchmarked off the red  
3 line there instead of the blue line.

4 THE COURT: All right. Why don't we take a break for  
5 the afternoon. Fifteen minutes.

6 MR. BERNICK: I'm almost done.

7 THE COURT: Are you?

8 MR. BERNICK: Well, I shouldn't say that --

9 THE COURT: No, if you are --

10 MR. BERNICK: I'll get myself into trouble because  
11 I'll ask more questions and I won't be done.

12 THE COURT: Okay. I won't scold you.

13 All right. Ladies and gentlemen, we'll take a  
14 15-minute break. Until 3:15, please.

15 THE DEPUTY CLERK: Please rise for the Jury.

16 (The Jury leaves the courtroom.)

17 (Witness temporarily excused.)

18 THE COURT: Okay. You can step down, Doctor, thanks.

19 MR. JOHNSON: Your Honor, just one thing, I didn't  
20 want to raise this before the jury, but Mr. Bernick represented  
21 to this Court that DX-6828 was pre-admitted.

22 THE COURT: Was?

23 MR. JOHNSON: Pre-admitted.

24 THE COURT: Right.

25 MR. JOHNSON: It was not. And that's not the only

1 time that has happened in this case. He's shown me documents  
2 saying they were pre-admitted when they were not.

3 THE COURT: Which one was that again?

4 MR. JOHNSON: This was the trade article. I didn't  
5 raise it before the jury, but I want him to be more careful.

6 THE COURT: All right. I think both of you have been  
7 pretty careful about that but let's continue to be careful.  
8 Okay?

9 MR. BERNICK: Thank you.

10 THE COURT: And also, when you ask someone a question  
11 about a journal or something, you were very vague in terms of  
12 how you asked the question as far as I'm concerned. You have  
13 to lay a better foundation if you're going to do that. Okay?

14 MR. BERNICK: I will, your Honor. I was just trying  
15 to get through it, frankly.

16 THE COURT: I know, but it's still better to say: Oh,  
17 did you read this? Isn't it true this journal says the  
18 following, you know.

19 MR. BERNICK: I know.

20 THE COURT: Okay. You know that. I know you know  
21 that.

22 Okay. We'll see you back here in 15 minutes.

23 (A recess is taken.)

24 (Proceedings resume -- Jury not present.)

25 MR. BERNICK: I should apologize to you all. We were

1 mistaken on that trade press article. Our spread sheet was  
2 off, so it was not pre-admitted and we won't offer it.

3 THE LAW CLERK: Please rise for the Jury.

4 (Jury present.)

5

6 L E S L I E M A R X, resumes, testifies further as follows:

7

8 THE COURT: Be seated, please. Thank you.

9 MR. BERNICK: We've been redecorating.

10 I guess that's not enough room for me to get to the  
11 podium here.

12 CROSS-EXAMINATION CONTINUES

13 BY MR. BERNICK:

14 Q My questions I will try to finish up here so we can get you  
15 out of here and go about our business.

16 So I just have two questions left.

17 First of all, the variance here, the reason I put  
18 these together, the variance -- this is the industry model.  
19 Right?

20 A Yes, looks like it's polyols.

21 Q It's polyols. Right.

22 The variance that's found here, whatever it is, gets  
23 put into the second stage model. Right?

24 A Well, when you say "put into," I explained earlier how it  
25 works. Do you want me to explain it again?

1 Q Sure, go ahead.

2 A What we do is look at the transactions.

3 Q Right.

4 A So, for example, is that Leggett & Platt's again?

5 Q Yes.

6 A So these are -- they were green circles on the graph over  
7 here. So it's Leggett & Platt's purchase of this TDI from Dow.

8 Q That's correct.

9 A So we're going to look at their purchases and break those  
10 prices into different components; a component that allows for  
11 the level to change, there's some high-end products that are  
12 just priced at a higher level; the component of the price that  
13 is benchmarked off the industry-wide price; and then we'll have  
14 a component for each transaction, that's the component that's  
15 specific to that transaction.

16 And then in order to calculate the but-for price for  
17 each transaction, we're going to use the same overall level,  
18 the same part that's specific to that transaction, but instead  
19 of having it be benchmarked off the industry-wide price, we'll  
20 have it be benchmarked off the red line, off the but-for price.

21 Q What you do is you have a relationship that's going to  
22 develop between the industry actual prices and in the industry  
23 model --

24 THE COURT: Mr. Bernick, I don't think the jury can  
25 see. So try to turn the other way.



1                   Yeah, thank you.

2       Q     In the industry model, you develop a relationship between  
3     the actual prices on the industry average basis and the but-for  
4     prices. That's the overcharge. Right?

5       A     Okay. I'm going to -- understand what the relationship is  
6     between the actual transaction prices and the industry-wide  
7     prices, and then I'm going to assume that instead of having  
8     whatever that relationship was to the industry-wide prices,  
9     they instead have that relationship to the but-for price.

10      Q     Right. It's like, maybe just to cut through it, it's a  
11     proportion?

12      A     No, not at all.

13      Q     I guess not.

14      A     No. Suppose that -- suppose that you had a product where  
15     the prices weren't sensitive to the industry-wide line at all,  
16     the prices were moving with the industry-wide line. Well, then  
17     there wouldn't be any overcharges, because whether the  
18     industry-wide line changes to be the but-for line, it wouldn't  
19     affect a product like that because that product wasn't  
20     sensitive to the industry-wide price.

21               But if you have a product like the one here where its  
22     prices are moving with the industry-wide line, you're -- we're  
23     going to look at the data and estimate the extent to which the  
24     prices are sensitive to the industry-wide line. And to the  
25     extent that they're sensitive to movements in the industry-wide

1 line, then they would be sensitive to a change if the  
2 industry-wide line were lower.

3 Q So, again, in an industry level you develop a relationship  
4 that shows variance or you believe to be overcharge. Right?  
5 But on an industry-wide average basis. Correct?

6 A That's right.

7 Q Okay. And here you're not getting customer-specific?

8 A That's right.

9 Q So you take the variance from the industry model and you're  
10 now going to calculate a customer specific overcharge. Right?

11 A Yes, a transaction-specific overcharge, yes.

12 Q A transaction-specific overcharge.

13 So that's why I say, the variance doesn't just sit  
14 here and do nothing, it becomes part of the calculation in the  
15 second stage model. Correct?

16 A Yeah, definitely.

17 But maybe I should be more specific. We're going to  
18 run a regression, look at the analysis, look at the  
19 relationship of a particular -- here, the particular  
20 transaction prices here, their relationship to the  
21 industry-wide price line. And to the extent that they are  
22 moving with the industry-wide price line, when you run that  
23 regression, we're going to assume that same relationship held,  
24 only benchmarked off the different price.

25 Q Now it turns out to be a little bit more complicated than

1       that, right, because the regression only works, produces a  
2       sufficiently robust result for less than all the transactions.  
3       Right?

4       A     There's some transactions where we have very few  
5       observations or the model doesn't allow you to reliably say  
6       what those but-for prices would be, and those prices we just  
7       look at similar transactions. It's not very -- it's not the  
8       bulk of the transactions, but in those cases we just look at  
9       similar transactions to estimate what the overcharge would be.

10      Q     So when your regression has an R-squared of -- what is it,  
11      60 or above?

12      A     .6.

13      Q     .6 or above, you go with that.

14                 If it doesn't have that, then you kind of do -- it's  
15      almost a little bit like real estate -- you look for  
16      comparables. There's the ones that don't satisfy that  
17      requirement, you see if there are comparables among the  
18      transactions that do and you use those prices. Is that fair?

19      A     That's right.

20      Q     Okay. Now, having done all that, that's not my question.  
21      I just wanted to get a transition.

22                 That this variance doesn't disappear. Whatever --  
23      whatever its value is as the jury finds it to be, whatever it  
24      is, this now carries forward. This is not -- this is a  
25      separate step but it builds on the work of the first step.

1 Fair?

2 A It builds on it. But again, if you have it for a  
3 particular product, if t's not moving around with the  
4 industry-wide price line, then you wouldn't expect, when the  
5 industry-wide line is replaced by the but-for line, it's not  
6 going to change. If it wasn't sensitive to the industry-wide  
7 price line in the first place, then when you substitute -- when  
8 you change instead of the industry-wide prices the but-for  
9 price, there's no overcharge.

10 Q So, this model -- in this model, it was -- the difference  
11 between the two lines was not significant at 95 percent.  
12 Correct?

13 A Right. Polyols was the one at 90 percent.

14 Q Okay. Now, did you do a statistical significant test on  
15 the final overcharge?

16 A No.

17 Q I'm sorry?

18 A No.

19 I'm not sure that would make sense, but, no, I didn't  
20 do it.

21 Q Now I want to get to the last point that I'd like to cover  
22 with you, which is, both of these charts have something in  
23 common, right, which is that they don't reflect the prices  
24 being charged by the different suppliers separately; that is,  
25 this is an industry average. Right?

1 A Median, yes.

2 Q Okay. Dow, Huntsman, et cetera, Bayer, BASF, those would  
3 all -- if we wanted to, we could display --

4 A Lyondell is in there, too.

5 Q Right. I was making a subliminal suggestion about  
6 Lyondell.

7 So they all have their own price lines that are not  
8 reflected separately. Right?

9 A It's just one median, yes. Those aren't separate.

10 Q Likewise here, we only have one set of prices,  
11 customer-specific prices. Those are these dots. Right?

12 A Those dots are just the Leggett & Platt, yeah, just for  
13 that particular product from Dow.

14 Q Right. So on both charts the jury can't tell whether the  
15 prices being charged by the suppliers were different from the  
16 average or different from each other. Right?

17 A You can't tell from those charts.

18 Q And over here we just have Leggett & Platt. We can't  
19 tell -- Leggett & Platt -- prices to Leggett & Platt, but we  
20 don't have Leggett & Platt -- these are purchases by Leggett &  
21 Platt. Right?

22 A Yeah. Voranate is the name of Dow's product, so it's  
23 Leggett & Platt buying from Dow. Voranate is just the name of  
24 Dow's TDI product.

25 Q Okay. So here too we can't tell what prices were being

1 charged by the other suppliers and whether they were the same  
2 or different. Right?

3 A You can't tell from those graphs, it just has the one  
4 buyer.

5 Q So, now would you expect, Dr. Marx, that, in fact, the  
6 prices being charged by industry-wide, by Lyondell, BASF,  
7 Bayer, Dow and Huntsman differed from one another?

8 A Oh, yeah. I mean, we know from talking to -- like Mr.  
9 Underdown, for example, said he paid different prices when he  
10 purchased different volumes from different suppliers. So,  
11 yeah, the prices are going to differ.

12 Q Right. And so these prices are going to be different, and  
13 the prices being charged to Leggett & Platt by Dow versus the  
14 others are going to be different. Right?

15 A Yep.

16 Q Okay.

17 A I mean, they could be the same too. But, you know, for  
18 example, with line differences or something you're going to  
19 have some differences in prices.

20 Q Now here when it came to the variance, you were very  
21 focused on the gap between the actuals and the but-fors.  
22 Right?

23 A That's one of the things I looked at.

24 Q Right. But if we go to the different prices that are being  
25 charged by the different companies to the same customer, your

1 model doesn't study those gaps. Correct?

2 A I didn't produce graphs showing them, but they're all -- I  
3 mean, all the data is in there, so that whatever differences  
4 are in the prices are in the model.

5 Q So I know that the data and the transactions are in the  
6 model, I know that. My question is different.

7 My question is: We've got another one here which is a  
8 demonstrative, this was taken from Mr. Pauley's dep. Do you  
9 recall that?

10 A I read Mr. -- the transcript of Mr. Pauley's deposition.  
11 That was a while back. That was a couple of years ago.

12 Q In fact, this was marked -- I showed this document to you  
13 when I took your deposition back in 2013. Correct?

14 A I think that's right.

15 Q Right. And what this shows is that for the same customer,  
16 Carpenter, we have the purple or lavender is BASF, the Huntsman  
17 is the -- I don't know if there's any Huntsman on here -- maybe  
18 way back over here; Bayer is red, so they're here; and Lyondell  
19 is yellow, and then my client didn't do very well with Mr.  
20 Pauley and Carpenter, we got -- that's it. I think.

21 I think that that's all the product that my client  
22 managed to sell to Carpenter.

23 But -- and these are the weighted median prices taken  
24 from Mr. Raiff's data, but these are -- the averages were  
25 calculated by our experts, and that's what I showed you.

1           And now I've got a question for you. You can see here  
2       that for the same customer at the same time, different  
3       companies are charging different prices. Right?

4       A    Actually you can't tell from that because they're not the  
5       net prices. Those aren't taking into account the discounts and  
6       the rebates.

7       Q    Sure.

8       A    But that said, we know, for example, from what Mr.  
9       Underdown said, he paid different prices to different suppliers  
10      depending on the volumes that he purchased.

11      Q    Right. So this would be consistent really with what Mr.  
12      Underdown testified to, which is that he had a range of  
13      different suppliers, and they charged and he paid different  
14      prices to the different suppliers. Right?

15      A    I think he said like usually like maybe one to two cents or  
16      so different. I think he mentioned something like that.

17      Q    Right. But these are actually much more substantial.

18      A    Well, they're not the net prices. You don't have --

19      Q    I said, these are the differences.

20      A    No, you don't have --

21      Q    I understand.

22      A    No, no, listen. The data have rebates already incorporated  
23      for some periods of time for some suppliers, and it might be  
24      that for some other supplier for that same period of time that  
25      data -- that supplier is using quarterly rebates or something



1       like that.

2               And so you can have a problem when you try to compare  
3       suppliers that perhaps Lyondell data, the yellow line that's  
4       kind of high, maybe that doesn't have the rebates included, and  
5       Lyondell was Carpenter's biggest supplier so you would have  
6       expected it to have a lower price; whereas, in a lot of the  
7       other data, the Bayer data I think in that period of time, it  
8       had the rebates already incorporated in the data.

9               So you're comparing net prices from one -- in that  
10       graph you're comparing the net prices from some suppliers to  
11       the not net price from other suppliers, and I'm not sure what  
12       you're going to be able to make of a graph like that.

13       Q       Except that we did -- they did these -- they plotted these  
14       prices using precisely the same weighted median price process  
15       that Mr. -- that Dr. Raiff used.

16       A       Yeah, but he wouldn't have used that --

17               MR. MARTIN:   Objection.

18       A       -- to compare different suppliers' prices.   You don't have  
19       the rebates in there.

20               MR. MARTIN:   I'll object to foundation too.   He's  
21       talking about what somebody else did with these documents.

22               MR. BERNICK:   What I want to get to --

23               THE COURT:   Rephrase the question.

24               MR. BERNICK:   I'll get to it.

25       BY MR. BERNICK:

1 Q Mr. Pauley described in vivid terms the negotiation process  
2 that took place between him and his variance suppliers. Right?

3 A I recall reading the deposition. It was quite some time  
4 ago now. It was a couple of years ago, three years ago.

5 Q Your model, your model does not explain; does not explain  
6 these gaps (writing on chart).

7 A I'm not sure those gaps are even real because those aren't  
8 the net prices.

9 Q Just bear with me.

10 Your model doesn't address and explain them. Correct?

11 A I don't try to explain gaps that I don't think are there.

12 Q But you never studied these gaps to find out if they were  
13 there. Correct?

14 A I looked at all the data and all the transactions and I  
15 took into account all of the rebates, and I've looked at --  
16 I've looked at a lot of these graphs like these, and the times  
17 when I've looked at particular instances where they were  
18 different and looked at whether there were, for example, end of  
19 quarter rebates, we know Lyondell's prices is going to be the  
20 lower one, that's their highest volume purchaser. What I've  
21 got and tried to attribute particular rebates to particular  
22 transaction, I typically end up coming up with net prices that  
23 are within one or two cents of each other.

24 Q The fact of the matter is that you have never done a  
25 comparative study for a given customer to see how these prices

1 ended up being different, if they were different. Correct?

2 A I don't think I've done that study.

3 Q The model does not explain these gaps, does it?

4 A Okay. Again, I'm not sure the gaps are even there. But  
5 the model is not trying to explain why there would be a volume  
6 discount.

7 Q And is it also true here, the model does not explain price  
8 differences between the different suppliers on an industry-wide  
9 basis?

10 A I'm not sure what you mean by "explain them."

11 Q Well, explain. If they're there, and if so, why they're  
12 there. That's what I mean by "explain."

13 A Well, I've looked at a lot of the data. There are things  
14 like volume discounts and early payment discounts that are --

15 Q I'm not fighting -- I'm sorry.

16 A -- that explain the differences.

17 Q I'm not fighting you.

18 THE COURT: Let her go ahead and finish.

19 A There are a different -- I mean, we're mostly looking at  
20 TDI here, right? This is all TDI.

21 But in polyols and MDI, there are lots of different  
22 products. So there are high-end more expensive MDI, more  
23 expensive polyols, and so some of the differences in prices are  
24 just because they're buying different products, they're buying  
25 a higher end or a more expensive product. You've got the early

1 payment discounts that have been mentioned, volume discounts.

2 So there are -- there are a number of things that I  
3 understand as explaining why you might see different prices,  
4 and they make sense to me.

5 Q I'll go back to my question and I will put it to you this  
6 way: Mr. Pauley or Mr. Hurst were in charge of purchasing and  
7 setting prices for Carpenter purchases. Do you know that?

8 A No, I don't know Mr. Hurst.

9 Q Well, his deposition was played here in court. You've read  
10 Mr. Pauley's deposition. Right?

11 A Yes, sir.

12 Q Okay. And as they described it and as others have  
13 described it, every one of these prices for Carpenter, they  
14 were the result of a negotiation process. Right?

15 A Yes, that's my understanding.

16 Q Okay. So negotiated prices. And you have not studied, you  
17 have not studied -- I'm not talking about whether the data is  
18 in there or it's accounted for or whether it's included, I'm  
19 talking about study, analyzed -- you have not studied how it is  
20 that these negotiations took place and how it is that the  
21 prices ended up being different. Correct?

22 A I'm not sure what you're asking about studying the  
23 negotiations.

24 I've read a lot of materials in this case talking  
25 about the negotiations. I feel like I have an understanding

1       that there was this negotiation process. I know where the  
2       prices started and I know where they ended up. I don't know  
3       all the details of the back-and-forth of any individual  
4       negotiation.

5       Q     Well, negotiation is the back-and-forth. Right?

6       A     What's important for me in analyzing this is what the price  
7       was, so where it ended up.

8       Q     I know for purposes of your model what you did. I'm not  
9       asking for what you did in your model. We know that the  
10      model -- the model does not explain these gaps. We just  
11      established that. So I'm asking you a different question.

12               I'm saying, isn't it a fact, just as you said you  
13      looked at the -- you looked at the final price that took place  
14      and you didn't study, analyze how those prices came to be  
15      different, did you?

16               MR. MARTIN: Objection, asked and answered.

17               THE COURT: Yeah, sustained. It's been asked and  
18      answered. It has. Several times.

19               MR. BERNICK: Well, okay. Maybe I'm losing track.  
20      It's late in the day, your Honor.

21               THE COURT: Different ways, but several times.

22               MR. BERNICK: Okay.

23      BY MR. BERNICK:

24      Q     And the same thing is true, is it not, on an industry  
25      basis; that is, that you ever -- you haven't studied to analyze

1       why the different suppliers on an industry-wide basis had  
2       different prices, have you?

3               MR. MARTIN: Asked and answered again.

4       A     I just gave a long list of why they were different.

5               THE COURT: Yeah, she did. Sustained.

6               MR. BERNICK: Okay. Well, you never end on a  
7       sustained note, but maybe I will.

8               THE COURT: Try another one.

9               MR. BERNICK: Maybe I'll make an experiment. Let me  
10      just check my notes.

11      Q     Is there a section of your report that you can direct us to  
12      that addresses these particular issues; that is, the different  
13      prices charged to the same customer? Can we find it in your  
14      report?

15      A     Well, there are discussions in the reports of the fact that  
16      there were rebates and discounts, volumes documents and these  
17      types of things that we've been talking about which I think of  
18      as explaining why you see different prices, those are in the  
19      report.

20      Q     But will we find your explanation with respect to a single  
21      customer in this case? Your explanation of how their prices  
22      came to be different?

23               MR. MARTIN: Objection. Asked and answered.

24      A     It will be the same long listed of explanations.

25      Q     Where would we find it? Where would we find a single

1 customer being discussed in your report if it is in the report?

2 MR. MARTIN: Asked and answered.

3 THE COURT: This is it. Last question. Go ahead.

4 Q Where will we find it in your report, a single customer?

5 A Because I viewed these explanations for why these prices  
6 are -- why a supplier might pay different -- sorry -- why a  
7 buyer might pay different prices to different suppliers. I  
8 view that as the same set of explanations that apply to all the  
9 customers. So I don't believe I've isolated Leggett & Platt,  
10 it was all about volume discounts and somebody else, it was all  
11 about early payment. I don't think I haven't done that.

12 THE COURT: Okay.

13 (Mr. Bernick confers with co-counsel off the record.)

14 Q This is a totally separate matter. You remember you were  
15 going through the list of all the plaintiffs that you read so  
16 clearly and ably?

17 A Yes.

18 Q My question is: Do you have damage numbers for all of  
19 those plaintiffs?

20 A It would be straight forward to calculate it, but I didn't  
21 list it on that table. I didn't -- I just had one British Vita  
22 number on the table that I had. It would be straightforward to  
23 break it out by each of these individually because they're  
24 calculated on a transaction-by-transaction basis. I don't have  
25 it here with me right now.

1 Q Is it in your report?

2 A No, it's not in the report.

3 Q Is it in your testimony?

4 A No, it's not in my testimony.

5 Q Was --

6 A It would be straightforward to calculate it. I haven't  
7 done it broken out by these individual parties.

8 Q Did Dr. Raiff calculate those for all those people?

9 A Again, in the process of calculating the overcharges,  
10 you're adding up all of the British Vita, Limited overcharges  
11 and adding them to the Vita Foam, Incorporated overcharges, so  
12 it's being done, but I don't think any of us have produced a  
13 table that has the numbers broken out by the individual  
14 sub-units of British Vita.

15 Q And they're all included in the overall --

16 A That's right.

17 MR. BERNICK: That's all I have, your Honor.

18 THE COURT: Thank you.

19 Mr. Martin, redirect.

20 MR. MARTIN: I'm going to try to run the gauntlet  
21 here.

22 MR. BERNICK: That's okay.

23 THE COURT: Leave it there, Mr. Bernick. I think he  
24 wants them.

25 MR. MARTIN: No, no, no.



1 MR. BERNICK: Oh. I'm not that clever.

2 MR. MARTIN: I have a space for them.

3 (Laughter.)

4 REDIRECT EXAMINATION

5 BY MR. MARTIN:

6 Q I have one page of questions.

7 A Okay.

8 Q Thank you for being with us all day.

9 A No worries.

10 Q And I'm going to try go in chronological order. So we're  
11 going to go from the oldest stuff to the most new stuff, but it  
12 should still be quick.

13 You were asked a lot of questions about quantitative  
14 analysis, of price increase announcements verse all prices. Do  
15 you recall those questions?

16 A Yes.

17 Q Now, you also talked about how when you got into this case  
18 you had Dow's expert reports, Dow's expert testimony and you  
19 reviewed that.

20 A Yes.

21 Q And that was important to you?

22 A Yes, it was.

23 Q Okay. And you discussed all that.

24 In those reports, did either Dr. Ugone one of their  
25 experts or Professor Elzinga, their other expert, say that Dr.

1 Raiff should have conducted a quantitative analysis of price  
2 increase announcements versus actual prices?

3 A No.

4 Q Did either one of them do that analysis?

5 A No.

6 Q In those reports did either Dr. Ugone or Professor Elzinga  
7 suggest that Dr. Raiff should have included a variable for  
8 negotiating power or skill in the market-wide model?

9 A No.

10 Q Did either one of them do that?

11 A No.

12 Q In those reports did either Dr. Ugone or Professor Elzinga  
13 suggest that Dr. Raiff should have done some sort of  
14 statistical significance testing on the second level model,  
15 second step model?

16 A No.

17 Q Did either one of them do that?

18 A No.

19 Q Okay, the last question is: There was some discussion  
20 about the 80 percent confidence level, confidence interval,  
21 confidence level.

22 Having the benefit of cross-examination, does anything  
23 change your opinion about whether your model is reliable given  
24 the 80 percent confidence level for pMDI?

25 A No.

1 MR. MARTIN: I'm done.

2 MR. BERNICK: I just have a couple of questions.

3 MR. MARTIN: How could that be?

4 (Laughter.)

5 MR. BERNICK: Well, if he I feel if I don't ask them  
6 then it will be pointed out that I didn't ask them. Right?

7 THE COURT: It's limited to those questions.

8 MR. BERNICK: I carefully limited it.

9 THE COURT: It should take you about a minute.

10 MR. BERNICK: A minute. Okay.

11 RECROSS EXAMINATION

12 BY MR. BERNICK

13 Q Forgive me if this is a little long.

14 So with respect to Dr. Raiff's reports, we went  
15 through at the outset of your examination that Dr. Raiff  
16 revised his reports twice to respond to comments that were made  
17 by experts or by lawyers. Do you recall that?

18 A Okay. By saying it was twice, so there was an initial  
19 report which had a mistake that was corrected. Then that --  
20 there was the responses of Dow's experts, and to them Dr. Raiff  
21 wrote another report, which had a mistake that was corrected.

22 Q Yes. So twice.

23 Now, counsel just asked whether Dr. Ugone or Dr.  
24 Elzinga asked you about negotiation skills or commented about  
25 negotiation skills and the like. I guess the question is kind

1 of the same.

2 Do you feel it's necessary for you to do work that  
3 covers all of these different issues that the defense experts  
4 be pointing out these issues so that you can respond to them?  
5 Or do you feel that as part of the your own responsibility to  
6 have a process that's thorough to cover these issues?

7 A I think with few exceptions Dr. Raiff thoroughly responded  
8 to the criticisms and issues that were raised by Dow's experts,  
9 and then there was one remaining issue that I looked at as well  
10 and I thought to myself, is there anything else I would like to  
11 do?

12 And it seemed to me it had all been pretty thoroughly  
13 covered with all of these experts in the long period of time  
14 they've worked on it.

15 Q Thank you.

16 MR. BERNICK: That's all I have.

17 THE COURT: Okay. Nothing further?

18 MR. MARTIN: Nothing further, your Honor.

19 THE COURT: Okay. Can I see you at sidebar? We don't  
20 need Walter right now. Counsel, we don't need Walter.

21 (Sidebar discussion off the record.)

22 (Witness excused.)

23 THE COURT: Ladies and gentlemen, we're just going to  
24 take a five-minute break so we can clear all of the this and  
25 then we're going to the continue for a bit more this afternoon.

1       Okay?   Thanks very much.

2               THE DEPUTY CLERK:   Please rise for the Jury.

3               (The Jury leaves the courtroom.)

4               (Proceedings resume - Jury not present.)

5               THE COURT:   Let's go.

6               THE LAW CLERK:   Please rise for the Jury.

7               THE COURT:   Be seated thank you.

8               Mr. Johnson, you have another witness?

9               MR. JOHNSON:   After that I hate to say "let's go to  
10       the video," but here we are again.

11              (Laughter.)

12              MR. JOHNSON:   We're going to hear from Bruce O'Brien.  
13       He's a Woodbridge employee; and 15 minutes.

14              (The above described videotaped deposition of Bruce  
15       O'Brien is played in open court.)

16              (Playing of the videotaped deposition is stopped.)

17              MR. JOHNSON:   Your Honor, that completes Mr. O'Brien.  
18       And there are were no exhibits with that.

19              We now move to Helen Ebert, and believe it or not, in  
20       four minutes we're actually going to hit two volumes of  
21       depositions for her.   First introduce her, she's a  
22       representative from the Vita Company, and then a little bit  
23       from her appearing as representative of Pathway Polymers, which  
24       is also a Vita company.

25              THE COURT:   Thank you.

1           (The above described videotaped deposition of Helen  
2 Sarah Ebert is played in open court.)

3           (Playing of the videotaped deposition is stopped.)

4 MR. JOHNSON: That was the first volume.

5           (Laughter.)

6 THE COURT: Okay.

7           (The second videotaped deposition of Helen Sarah Ebert  
8 is played in open court.)

9           (The playing of videotaped deposition is stopped.)

10 MR. JOHNSON: That's it for Ms. Ebert.

11 THE COURT: Okay.

12 MR. JOHNSON: And we're now going to turn to Martin  
13 Cosgrove taken June 29th, 2010. 12 minutes.

14           (The above described videotaped deposition of Martin  
15 Cosgrove is played in open court.)

16           (Playing of the videotaped deposition is stopped.)

17 MR. JOHNSON: We have a glitch in the 12-minute one.

18 THE COURT: Is there...

19 MR. JOHNSON: Can we take it up tomorrow?

20 THE COURT: Ladies and gentlemen, we'll recess for the  
21 day. Okay?

22           Please don't discuss anything about the case. And  
23 we'll start promptly at 8:30 tomorrow and have it similar to  
24 today. As you know, Friday we're off. So thanks again for  
25 your patience and it's been a long day today. We'll see you

1 tomorrow morning at 8:30, please.

2 THE LAW CLERK: Please rise for the Jury.

3 (The Jury leaves the courtroom.)

4 THE COURT: Okay. We'll see you tomorrow morning for  
5 8:30.

6 MR. JOHNSON: Just for your planning purposes, your  
7 Honor, we have a limit more than two hours of video to go and  
8 then we're going to be resting.

9 THE COURT: Okay.

10 MR. JOHNSON: So I just wanted to let you know that.  
11 And do you know yet what you're schedule is for  
12 Monday?

13 THE COURT: I'll know tomorrow morning.

14 MR. JOHNSON: Thank you.

15 THE COURT: Okay?

16 I know -- sit down, everyone, please.

17 I know that the morning I'm committed. Whether I get  
18 here at 12 o'clock and we work 12 to 5, I'll let you know  
19 tomorrow. Okay? But the morning you can plan accordingly if  
20 you have to.

21 If you rest tomorrow you'll be resting around 10:30,  
22 around our break.

23 And you'll be prepared to go forward?

24 MR. STREETER: Yes, your Honor. We put together about  
25 three and a half hours worth of video. The problem is that

1       they've objected to ten of our designations so we can't play  
2       those. But we've put together about three and a half hours  
3       worth, and I think that should get us through most of the day.

4               THE COURT: Do you have any live witnesses?

5               MR. STREETER: Well, we had thought we were going to  
6       start with them on Monday and they're coming from far away  
7       places, and we just don't have them here tomorrow.

8               THE COURT: Don't tell them otherwise for Monday until  
9       tomorrow. Okay?

10              MR. STREETER: Absolutely.

11              THE COURT: Don't have them change their plans. And  
12       then I'll -- we have three and a half hours, and -- do we have  
13       the objections? Have we gotten objections?

14              (The Court and the Law Clerk confer off the record.)

15              THE COURT: Okay. All right.

16              MR. STREETER: So we'll have almost six hours of  
17       material for the jury between their two and a half hours and  
18       our three and a half.

19              THE COURT: All right. Okay. We'll see you tomorrow  
20       morning at 8:30. Thanks.

21              MR. MARTIN: Thank you.

22              THE COURT: Okay.

23              (At 4:27 p.m., an adjournment is taken to Thursday,  
24       March 24, 2016, at 8:30 a.m.)

25



